Camila Siebert Altavini

Comportamento suicida e fatores associados na população universitária das 27 capitais brasileiras

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RESUMO

Altavini CS. Comportamento suicida e fatores associados na população universitária das 27 capitais brasileiras [tese]. São Paulo: Faculdade de Medicina, Universidade de São Paulo; 2024.

O suicídio é uma das principais causas de morte entre jovens de 15-29 anos e a implementação de estratégias de prevenção são imperativos. Apesar da relação custo-benefício promissora, são poucas as evidências acerca de estratégias de prevenção primária. Dados recentes apontam para resultados mais otimistas quando estratégias de prevenção consideram especificidades da população-alvo. Pouco sabemos sobre os fatores associados ao suicídio entre jovens universitários, prejudicando o desenvolvimento de estratégias de prevenção para esta população. Nossos principais objetivos foram: Investigar as principais estratégias de prevenção primária do suicídio entre adultos e avaliar as evidências de seus efeitos; Analisar a prevalência de ideação suicida e fatores associados na população universitária; Identificar subgrupos na população universitária, conforme indicadores de ajustamento acadêmico e saúde mental, e analisar sua associação com ideação suicida e sintomas depressivos. Inicialmente foi realizada uma revisão de revisões sistemáticas. Utilizamos a busca em cinco bases para identificar artigos de avaliação de estratégias de prevenção do suicídio. Dois revisores extraíram os dados e avaliaram a qualidade metodológica dos estudos. Utilizando dados extraídos de uma pesquisa nacional com estudantes universitários, estimamos a prevalência de ideação suicida e sua associação com características sociodemográficas e acadêmicas. Por fim, realizamos uma análise de classes latentes, que possibilitou identificar subgrupos de estudantes a partir de características similares de saúde mental e ajustamento acadêmico. Potenciais associações das classes à ideação suicida e sintomas depressivos foram identificadas a partir de análise de regressão logística. Na revisão sistemática encontramos evidências de pequena magnitude de efeito das intervenções sobre os desfechos estudados. A maioria dos programas de prevenção multicomponentes com resultados promissores foram implementados direcionados a populações específicas. A restrição de meios foi a única intervenção que mostrou algum efeito na redução do suicídio quando aplicada individualmente. Além disso, a qualidade das comunicações midiáticas está inversamente relacionada com mudanças nas taxas de suicídio. A maioria das publicações revisadas apresentaram baixa qualidade metodológica. Podemos concluir, portanto, que programas de prevenção de suicídio podem obter melhores resultados quando consideram características específicas da população-alvo e combinam diferentes

estratégias, incluindo restrição aos meios. Em relação aos estudantes universitários, encontramos uma prevalência de 5,9% de ideação suicida. As variáveis associadas a maiores chances de ideação suicida foram: sofrimento mental, abuso sexual e variáveis acadêmicas, como insatisfação com o curso e baixo desempenho acadêmico. Afiliação religiosa e presença de filhos foram inversamente associados ao desfecho. Resultados da análise de classes latentes indicaram a existência de quatro subgrupos de estudantes, havendo dois com maiores chances de apresentar ideação suicida e sintomas depressivos. Em relação aos estudantes universitários, observamos que o impacto da vida acadêmica na saúde mental dos estudantes deve ser acompanhado por serviços psicopedagógicos e de saúde das instituições de ensino. A detecção precoce de estudantes em sofrimento psíquico, é essencial para o encaminhamento adequado a serviços de apoio. A avaliação da relação entre vulnerabilidades relacionadas ao suicídio ainda é muito necessária para adaptar planos de prevenção adequados nas instituições de ensino.

Palavras-chave: Suicídio. Ideação suicida. Estudantes. Epidemiologia. Saúde mental. Fatores de risco.

ABSTRACT

Altavini CS. Suicidal behavior and associated factors among college students from 27 Brazilian state capitals [thesis]. São Paulo: "Faculdade de Medicina, Universidade de São Paulo"; 2024.

Suicide is one of the leading causes of death among youth aged 15-29 years old, and the implementation of prevention strategies is imperative. Despite promising cost-benefit, primary prevention strategies have limited evidence of effect. Recent data point to optimistic results when prevention strategies account for specificities of the target population. Current knowledge about the factors associated with suicide among young university students is scarce, hindering the development of effective prevention strategies for this population. Our main purposes were: To investigate main strategies of primary suicide prevention among adults and to evaluate the evidence of effectiveness of such interventions; To analyze the prevalence of suicidal ideation and associated factors among Brazilian college students; To identify subgroups among Brazilian college students, according to indicators of academic adjustment and mental health, and analyze their association with suicidal ideation and depressive symptoms. First, we conducted systematic review. We searched on five databases to identify articles evaluating suicide prevention. Two reviewers extracted the data and assessed the methodological quality of included studies. Then, using a dataset from a national survey of university students, we estimated the prevalence of suicidal ideation and its association with sociodemographic and academic characteristics. Finally, we used a latent class analysis to identify subgroups of students, investigating for potential associations of the classes with suicidal ideation and depressive symptoms. In the systematic review, evidence of small magnitude effects on suicide-related outcomes was detected. Most multicomponent prevention programs with promising results targeted specific populations. Means restriction was the only intervention that showed any effect on reducing suicide when applied individually. Evidence also indicated that quality of media reports is inversely related to changes in suicide rates. Most of the included articles were of low methodological quality. It is possible to conclude that multicomponent programs and means restriction strategies have a greater chance of reducing suicide rates, especially when targeting specific populations. However, there is insufficient evidence to recommend a widespread implementation of suicide primary prevention. After running multivariate logistic regression analyzes on a database of Brazilian university students, we found a prevalence of 5.9% of suicidal ideation. In the final regression model, the variables associated with greater

chances of suicidal ideation were psychological distress, sexual abuse and academic variables, such as dissatisfaction with the course and low academic achievement. Religious affiliation and the having kids were inversely associated with the presence of suicidal ideation. Results from the latent class analysis indicated the existence of four subgroups of students with similar characteristics of mental health and academic adjustment. Two of them were more likely to present suicidal ideation and depressive symptoms. The impact of academic life on students' mental health must be closely monitored by the university's' pedagogical and health services. Early identification of students in psychological distress is essential for appropriate referral to supportive services. Assessment of the relationship between suicide-related vulnerabilities is still very necessary to develop adequate prevention plans in educational settings.

Keywords: Suicide. Suicide ideation. Students. Epidemiology. Mental health. Risk factors.

LISTA DE ABREVIATURAS E SIGLAS

OMS / WHO - Organização Mundial da Saúde

LCA - *Latent Class Analysis* (Análise de Classes Latentes)

IS - Ideação suicida

FONAPRACE - Fórum Nacional de Pró-Reitores de Assistência Estudantil

RS - Revisão sistemática

PRISMA - *Preferred Reporting Items for Systematic Reviews and Meta-analysis*

PROSPERO - *Prospective Register of Systematic Reviews*

AMSTAR - *A MeaSurement Tool to Assess Systematic Reviews*

ROBIS - *Risk of Bias In Systematic Review*

IES - Instituições de Ensino Superior

BDI-II - Inventário de Depressão de Beck, versão II

SRQ - *Self-Report Questionnaire*

ASSIST - *Alcohol, Smoking, and Substance Involvement Screening Test*

OR - *Odds ratio* (Razão de Chances)

IC - Intervalo de confiança

SPAN USA - Suicide Prevention Action Network

INEP - Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira

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1 INTRODUÇÃO

1.1 Contextualização do tema

Nos últimos anos, o suicídio tem sido registrado como uma das principais causas de mortes entre jovens de 15-29 anos (Naghavi, 2019; World Health Organization, 2021), chamando a atenção de pesquisadores, que buscam compreender melhor esse fenômeno e como preveni-lo (Mortier et al., 2018a; Mathieu et al.., 2021; Pan et al., 2021; Lipson et al., 2022). Atualmente o suicídio é uma das condições prioritárias a serem monitoradas pelo Mental Health Gap Action Program (mhGAP) da Organização Mundial da Saúde (OMS) (Keynejad et al., 2018). Corroborando para a percepção do suicídio como um problema global, a redução da mortalidade por suicídio foi definida como uma das 17 metas dos Objetivos de Desenvolvimento Sustentável das Nações Unidas - indicador 3.4.2 (United Nations, 2015). O impacto do suicídio entre jovens destaca a necessidade de mais pesquisas robustas que possam subsidiar o desenvolvimento de políticas públicas para esta população.

Apesar de estudantes universitários apresentarem taxas de suicídio menores do que jovens que não estão matriculados em instituições de ensino (Mortier et al., 2018b), uma importante meta-analise (Mortier et al., 2018a) encontrou altas proporções de comportamentos e cognições suicidas na população universitária. Dados recentes apontam ainda que os números de comportamento suicida entre jovens e universitários não têm melhorado (Van Meter; Knowles; Mintz, 2023). Adicionalmente, um recente estudo norte-americano, de abrangência nacional (n > 350.000 alunos), indica uma tendência crescente de ideação suicida entre os estudantes de ensino superior (Lipson et al., 2022). Estudos indicam também potencial aumento de comportamentos suicidas entre universitários no Brasil (FONAPRACE, 2019; Reifschneider; Altavini; Beckmann, 2022; Alves et al., 2024). Os comportamentos suicidas entre jovens universitários podem impactar a saúde mental e a vivência acadêmica dos membros da comunidade universitária tanto a nível individual quanto coletivo.

A morte de um estudante universitário frequentemente é acompanhada por ampla publicização por parte da imprensa. Essa ampla divulgação, poucas vezes seguindo as diretrizes de comunicação (World Health Organisation [WHO], 2023), pode acarretar não apenas em uma supervalorização do fato, mas na ocorrência do que conhecemos como efeito de contágio (Ishimo et al. 2021, Bohanna; Wang, 2012), que afeta principalmente indivíduos sob maior vulnerabilidade para o desenvolvimento de comportamentos suicidas. Essa ampla publicização de caso de suicídio entre estudantes universitários geram um forte impacto na sociedade como um todo. Desafios vividos nesta fase de transição para a vida adulta, somados à pressão acadêmica e a questões de saúde mental, como depressão e ansiedade, frequentemente contribuem para a vulnerabilidade desse grupo. O suicídio entre estudantes universitários representa não apenas uma perda irreparável de vidas jovens e promissoras para o futuro da economia global, mas também gera um efeito devastador em famílias, amigos e na comunidade acadêmica como um todo.

Diversos fatores interagem entre si para contribuir com o aumento ou redução na vulnerabilidade e risco de suicídio entre jovens universitários. Além dos fatores de risco já conhecidos para a população geral, estudos (Cash; Bridge, 2009; Aggarwal et al., 2017; Cha et al., 2018; Li; Dorstyn; Jarmon, 2019; Poland; Ferguson, 2021) têm buscado compreender fatores próprios desta fase do desenvolvimento ou do ambiente escolar/universitário que estão relacionados ao comportamento suicida em estudantes. Alguns dos fatores de risco listados pelos autores são: vivência de bullying, falta de conexão social, diversidade étnica e cultural, rendimento escolar abaixo da média, pessoas que se identificam como LGBTQIA+, isolamento social, normas socioculturais rígidas, desregulação emocional, ruminação/ supressão de pensamentos e sentimentos negativos, atitudes negativas em relação à escola. Os estudos atuais sobre o tema ainda são muito heterogêneos, apresentando medidas não padronizadas e discrepâncias metodológicas. A falta de consenso sobre a aplicabilidade clínica dos fatores de risco de suicídio (Franklin et al., 2017; Harmer et al., 2024) compromete a predição de comportamentos e cognições suicidas entre os alunos. Os fatores associados devem ser examinados criticamente para identificar vulnerabilidades e adaptar estratégias preventivas.

Apesar do conhecimento acerca dos fatores associados ao comportamento suicida entre jovens e universitários, não há até o presente momento evidências conclusivas acerca do efeito positivo dos programas de prevenção primária/universal para essa população (Harrod et al. 2014). Estudos recentes apontam desafios na redução e prevenção de comportamentos e cognições suicidas entre jovens (Lipson et al., 2022; Van Meter; Knowles; Mintz, 2023). Dados de pesquisas dos últimos anos têm apontado para a compreensão de que estratégias de prevenção de suicídio são mais promissoras quando desenvolvidas de forma adaptada à população-alvo (Zalsman et al., 2016; Witt et al., 2017; Reifels et al., 2018; Rostami et al., 2021), o que destaca a importância de se conhecer não apenas os fatores associados ao suicídio entre os universitários, mas se há - e quais são - grupos de estudantes com maior vulnerabilidade para o suicídio. Acreditamos, portanto que uma compreensão das características associadas a um perfil do universitário em situação de maior vulnerabilidade para o suicídio poderá preencher tais lacunas de conhecimento e subsidiar programas de prevenção de maneira mais robusta. Estudos que exploram esse tema são realizados, em sua maioria, em países ocidentais, de alta renda, localizados no hemisfério norte (O'Connor; Nock, 2014; Mortier et al., 2018b; Naghavi, 2019). Não há até o momento estudos robustos, que sejam replicáveis e representativos, sobre possíveis fatores de risco para suicídio entre os estudantes universitários brasileiros.

O I Levantamento Nacional Sobre O Uso de Álcool, Tabaco e Outras Drogas Entre Universitários das 27 Capitais Brasileiras (Andrade; Duarte; Oliveira, 2010) consistiu no primeiro estudo brasileiro que propôs a investigação de aspectos relacionados à saúde mental de universitários brasileiros em uma amostra representativa desta população. Utilizando de uma metodologia rigorosa para a seleção amostral, dados de mais de 12.000 estudantes foram coletados em universidades públicas e privadas de todo o território nacional. Além de informações sobre o consumo de álcool, tabaco e outras drogas, o estudo também buscou levantar dados sobre a saúde mental e vivência acadêmica dos estudantes. Diversas análises já foram realizadas e publicadas a partir dos dados coletados (Oliveira et al., 2013; Eckschmidt; Andrade; Oliveira, 2013; Eckschmidt et al., 2013; Castaldelli-Maia et al., 2014a; Castaldelli-Maia et al., 2014b; Junior et al., 2018; Junior et al., 2019), no entanto nenhuma que tenha tido como foco principal a temática do suicídio. Sendo assim, o presente estudo propõe revisar as evidências de efetividade acerca de estratégias de prevenção de suicídio em primeiro momento. Em

seguida, uma análise da prevalência de ideação suicida nessa população e os fatores associados, bem como uma análise de classes latentes, que possibilita a identificação de subgrupos, conforme as características levantadas pelo I Levantamento Nacional Sobre O Uso de Álcool, Tabaco e Outras Drogas Entre Universitários das 27 Capitais Brasileiras (Andrade; Duarte; Oliveira, 2010).

1.2 Justificativa

1.2.1 Artigo I

Embora uma análise recente do projeto *Global Burden of Disease* tenha indicado que as taxas de mortalidade por suicídio padronizadas por idade diminuíram 32,7% entre 1990 e 2016 (Naghavi, 2019), o suicídio continua sendo um importante causa de mortalidade precoce em todo o mundo. Nos últimos anos, a Organização Mundial da Saúde (OMS) liderou uma resposta política internacional robusta, com o objetivo de promover estratégias e ações baseadas em evidências para prevenir o suicídio e definir objetivos e metas para a redução das taxas globais de suicídio. No Brasil, só em 2019 foi registrado um total de 13.520 mortes por suicídio, das quais mais de 28% (n = 3.862) ocorreram entre jovens de 15 a 29 anos. Esse número representa um aumento de mais de 39% em relação ao número de suicídios nessa faixa etária em 2009 (MS, 2009–2019). Apesar de observar um aumento no número de mortes por suicídio nos últimos anos - especialmente entre jovens - Brasil não possui até o momento um plano ou programa estruturado para prevenção do suicídio no país. Tendo em vista a complexidade e a magnitude do comportamento suicida, o desenvolvimento e implementação de estratégias de prevenção do suicídio têm sido incentivadas, de forma a envolver tanto entidades governamentais quanto não-governamentais. Estratégias e planos de prevenção do suicídio devem ser firmemente fundamentados em evidências, de forma a contribuir significativamente para a prevenção e redução do comportamento suicida a nível global, nacional ou local. Orientações técnicas baseadas em evidências para reduzir as taxas de suicídio na população em geral ainda são escassas. Estima-se que apenas 20,6% dos países membros da Organização Mundial de Saúde - a maioria de renda média-alta e alta - desenvolveram planos e diretrizes nacionais de prevenção do suicídio (WHO, 2018). Apesar dos esforços para uma ampla conscientização acerca da importância do desenvolvimento e implementação de estratégias de prevenção do suicídio, dados de

evidências sobre o tema ainda são limitados. Pesquisadores têm se debruçado para desenvolver estratégias e métodos para avaliação de abordagens ou intervenções que são comumente implementadas em programas de prevenção do suicídio (Platt; Niederkrotenthaler, 2020).

Grande parte dos estudos que indicam evidências em intervenções para prevenção do comportamento suicida se debruçam sobre implementação de estratégias dos níveis secundário e terciário de prevenção (du Roscoät; Beck, 2013; Harrod et al., 2014; Wilcox; Wyman, 2015), os quais dependem da identificação prévia de indivíduos em alto risco, que tenham expressado ideação suicida grave ou fizeram tentativa de suicídio (van der Feltz-Cornelis et al., 2011). No entanto, sabemos que a maioria das pessoas que apresenta pensamentos suicidas não recebe nem procura ajuda nos serviços de saúde mental (Michelmore; Hindley, 2012; Hom; Stanley; Joiner, 2015; Piscopo et al., 2016). Sendo assim, a prevenção primária tem sido defendida por estudiosos do tema como estratégias mais promissoras para reduzir as taxas de mortalidade por suicídio, frente a estratégias secundárias e terciárias, que têm foco maior em indivíduos de alto risco (Yip, 2011; Mulder, 2020; Sinyor; Schaffer, 2020).

Atualmente, as evidências sobre a eficácia das intervenções e programas de prevenção primária para redução do suicídio ainda são limitadas. Revisões sistemáticas (RS) são os principais desenhos de estudo que endossam a prática baseada em evidências, sendo e são essenciais para o desenvolvimento de diretrizes e políticas de saúde (Nelson, 2014). Boa parte das revisões sistemáticas sobre prevenção do suicídio no nível primário/universal apresentam falhas metodológicas importantes e resultados divergentes. Há uma necessidade de avaliação minuciosa dos estudos existentes para que se possa haver uma compreensão real das evidências acerca do tema, ponto essencial para o desenvolvimento de políticas públicas adequadas.

Sendo assim, o estudo descrito e publicado no Artigo I desta tese apresenta uma revisão sistemática acerca da efetividade de estratégias de prevenção primária para redução do suicídio. O objetivo principal do estudo é sintetizar as principais estratégias e programas de prevenção primária do suicídio entre adultos e avaliar as evidências de efetividade de tais intervenções. Especificamente, investigamos (1) o impacto de intervenções aplicadas individualmente, como restrições de meios, cobertura midiática do suicídio, políticas educacionais e treinamento de *gatekeeprs* sobre os desfechos

relacionados ao suicídio, e (2) o efeito de programas com múltiplos componentes em comparação com intervenções aplicadas individualmente, sobre os desfechos relacionados ao suicídio na população adulta.

1.2.2 Artigo II

Comportamentos e cognições suicida entre estudantes tem sido associado a diversos fatores, como: sensação de pertencimento, adversidades na infância, transtornos do humor, uso abusivo de substâncias e problemas relacionados à escola (Cash; Bridge, 2009; Drum et al., 2009; Aggarwal et al., 2017; Cha et al., 2018; Li; Dorstyn; Jarmon, 2019; Poland; Ferguson, 2022). Além de dificuldades próprias da transição para a fase adulta, estudantes universitários precisam lidar com rotinas acadêmicas intensas. Além da falta de apoio social, dificuldades financeiras e outros fatores de risco já conhecidos para o suicídio, há fatores relacionados à vida acadêmica que estão associados a uma maior probabilidade de adoecimento mental e presença de comportamentos e cognições suicidas (Drum et al., 2009; Hansen; Lang, 2011; Mortier et al., 2015; Poland; Ferguson, 2022).

Até o momento, são poucos os estudos que investigaram a relação entre contexto acadêmico e comportamentos suicidas. Apesar disso, podemos encontrar associações entre sofrimento mental e comportamentos e cognições suicidas a fatores específicos relacionados à vida acadêmica, como: baixo desempenho acadêmico, pressão por sucesso, sobrecarga, insatisfação com o curso, desmotivação e dificuldades de aprendizagem (Ross; Niebling; Heckert, 1999; Beiter et al., 2015; Auerbach et al., 2018; Barker et al., 2018; Duffy et al., 2020; Cheng et al., 2020; Sheldon et al., 2021). Estudos robustos com amostras representativas são de extrema necessidade para melhor compreender os fatores de risco manejáveis relacionados a comportamentos e cognições suicidas entre estudantes universitários. Desvendar essas características é fundamental para o desenvolvimento de estratégias preventivas efetivas (Zalsman et al., 2016; Reifels et al., 2018; Rostami et al., 2021; Altavini et al., 2022).

Uma meta-analise recente (Demenech et al., 2021) encontrou que a maior parte (mais de 70%) dos estudos sobre depressão, ansiedade e comportamentos suicidas entre estudantes brasileiros utilizam amostras não representativas. Além disso, a maior parte

dos estudos com universitários brasileiros investigaram amostras a estudantes de medicina e outras áreas da saúde, não sendo possível generalizar os resultados para outros cursos. Os autores dessa meta-analise apontam para a necessidade de atenção integral à saúde mental para os universitários brasileiros, bem como a necessidade de padronização da metodologia dos estudos neste tema, especialmente a importância de realização de estudos robustos com metodologia rigorosa.

Tendo em vista tal lacuna no conhecimento científico, no estudo descrito no Artigo II hipotetizamos um modelo conceitual para descrever uma relação hierárquica entre fatores potencialmente associados à ideação suicida entre estudantes universitários brasileiros, utilizando dados de uma amostra representativa desta população. Levantamos, portanto, a hipótese de que, além de características sociodemográficas, sofrimento mental e experiências traumáticas, fatores relacionados à vida acadêmica podem também ser indicadores de sofrimento psicológico e, portanto, estar associados comportamentos e cognições suicidas nos estudantes, conforme apontado anteriormente (Cha et al., 2018; Sheldon et al., 2021; Poland; Ferguson, 2022).

1.2.3 Artigo III

Um dos resultados encontrados na revisão sistemática (Artigo I) foi acerca da qualidade das comunicações midiáticas sobre suicídio. Sabemos que elas podem contribuir para a redução de comportamentos suicidas quando essas são realizadas de maneira responsável, conforme as diretrizes vigentes. Por outro lado, quando essas não seguem as diretrizes de comunicação responsável, estão diretamente relacionadas ao efeito contágio, contribuindo para o aumento de comportamentos suicidas. (Bohanna; Wang, 2012; Ishimo et al., 2021)

A comunicação é, portanto, peça fundamental tanto na forma como as pessoas serão expostas após um suicídio quanto em campanhas de prevenção primária - como campanhas de conscientização. não há, até o momento, evidências de que campanhas de conscientização estejam relacionadas a reduções nas taxas de suicídio. Essa falta de evidências nos chama a refletir sobre como a ferramenta da comunicação tem sido utilizada em tais campanhas. Dessa forma, tal discussão motivou o desenvolvimento da carta apresentada no Artigo III do presente trabalho, buscando levantar considerações

sobre o impacto das comunicações realizadas em campanhas como o "Setembro Amarelo", especialmente no público jovem.

1.3 Métodos

1.3.1 Objetivos

Estudo I

Objetivo Geral:

- Investigar, na literatura, as principais estratégias e programas de prevenção primária do suicídio entre adultos e avaliar as evidências de efetividade de tais intervenções.

Objetivos Específicos:

- Investigar, na literatura, o impacto de intervenções aplicadas individualmente, como restrições de meios, cobertura midiática do suicídio, políticas educacionais e treinamento de gatekeeprs sobre os desfechos relacionados ao suicídio.
- Investigar, na literatura, o efeito de programas com múltiplos componentes em comparação com intervenções aplicadas individualmente, sobre os desfechos relacionados ao suicídio na população adulta

Estudo II

Objetivos Gerais:

- Analisar a prevalência e fatores associados à ideação suicida na população universitária.
- Identificar subgrupos na população universitária, conforme indicadores de ajustamento acadêmico e saúde mental, e analisar sua associação à presença de ideação suicida e sintomas depressivos.

Objetivos Específicos:

- Estimar a prevalência de ideação suicida na população universitária das 27 capitais brasileiras;
- Investigar, na literatura, os fatores associados ao suicídio;
- Analisar a associação entre presença de ideação suicida e:
    - características sociodemográficas da população estudada;
    - fatores relacionados à vida acadêmica da população estudada;
    - uso de substâncias e comportamentos gerais de risco na população estudada;
    - indicadores de sofrimento mental na população universitária estudada.
- Identificar subgrupos na população universitária, conforme indicadores de ajustamento acadêmico e saúde mental, e analisar sua relação com:
    - características sociodemográficas;
    - desempenho acadêmico;
    - ideação suicida e sintomas depressivos.

1.3.1 Métodos e Análises

O presente estudo foi dividido em duas partes complementares. Inicialmente foi realizada uma revisão sistemática de literatura acerca de evidências de efetividade das intervenções de prevenção primária/universal do suicídio. Após um estudo aprofundado sobre o tema, foram realizadas as análises estatísticas descritivas, de associação, e de classes latentes. Todas as análises estatísticas utilizaram uma o banco de dados do estudo transversal denominado '*I Levantamento Nacional Sobre o Uso de Álcool, Tabaco e Outras Drogas Entre Universitários das 27 Capitais Brasileiras'*, conforme entendimento com os autores do estudo original (ANEXO A), que é composto por uma amostra probabilística e representativa de estudantes universitários das 27 capitais brasileiras.

Estudo I

A primeira fase do estudo consistiu em uma revisão sistemática do tipo 'Overview'. Para realização desta, seguimos rigorosamente uma metodologia de revisão sistemática (Grant; Booth, 2009; Nelson, 2014; Aromataris; Munn, 2020) e aderimos às diretrizes '*Preferred Reporting Items for Systematic Reviews and Meta-analysis'* (PRISMA) (Page et al., 2021). Durante a fase de planejamento, o protocolo de estudo foi registrado no *Prospective Register of Systematic Reviews - PROSPERO* (www.crd.york.ac.uk/PROSPERO) da Universidade de York, sob o número de registro CRD42020203661 (ANEXO B).

A presente revisão investiga quais são as estratégias aplicadas e as evidências acerca dos efeitos de programas, políticas e intervenções de prevenção do suicídio abrangendo a faixa-etária dos estudantes universitários. Para obtenção de resultados mais abrangentes acerca da prevenção do suicídio na comunidade, optou-se por investigar não apenas a população de estudantes universitários, mas os efeitos das ações de prevenção na população adulta não-clínica como um todo.

Sendo assim, os componentes PICO/PECO (*Population, Intervention/Exposure, Comparison, Outcome*) da revisão incluíram: população adulta não clínica, que foi submetida a uma ou mais intervenções (programas/políticas de prevenção) ou exposições (estratégias de controle de populações, por exemplo, acesso a armas de fogo e reportagens na mídia). Sempre que possível, a intervenção deveria ser comparada com sujeitos não submetidos ao programa/política/intervenção ou sem intervenção alguma, para avaliar os resultados relacionados ao suicídio (por exemplo, mudanças na taxa de suicídio, número de tentativas de suicídio ou número de visitas aos serviços de emergência devido a tentativas de suicídio). Para sintetizar as práticas existentes na área em uma única visão geral, o tipo de artigo elegível foi revisão sistemática, com ou sem meta-analise.

Tipo de estudo e delineamento

Uma *'Overview'* é um tipo particular de revisão sistemática - uma revisão de revisões ou uma meta-revisão. Esse tipo de revisão sistemática também é conhecido como "revisão sistemática de revisões sistemáticas" ou "*Umbrella review*" (Becker; Oxman, 2008; Aromataris; Munn, 2020). Este método relativamente novo visa alcançar um alto

nível de evidência usando uma metodologia rigorosa para reunir e avaliar os dados existentes de várias revisões sistemáticas, que são sintetizados de forma ampla em um único documento (McKenzie; Brennan, 2017).

Com uma *'Overview'*, os profissionais de saúde podem acessar resultados de diversos estudos de uma área temática, bem como as evidências de intervenções existentes para uma questão específica (Becker; Oxman, 2008; Grant; Booth, 2009; Aromataris; Munn, 2020). Embora as revisões sistemáticas sejam consideradas o padrão para a prática de rotina, a qualidade desses estudos pode variar muito. Consequentemente, as conclusões alcançadas por estudos semelhantes são por vezes divergentes (Manchikanti et al., 2009). Achados distintos e conclusões conflitantes podem ser atribuídas à heterogeneidade de metodologias, resultados e populações-alvo. A presente revisão sistemática revisita as revisões existentes até o momento sobre a prevenção primária/universal do suicídio entre adultos e avalia os aspectos metodológicos para lançar luz sobre a as evidências atuais.

Critérios de inclusão e exclusão

Para ser incluído no estudo, o artigo deveria (a) ser uma revisão sistemática, com ou sem meta-analise, ou uma revisão sistemática com métodos mistos; (b) investigar programas, políticas e intervenções de prevenção primária/universal do suicídio; (c) investigar intervenções na população adulta não-clínica; (d) relatar desfechos primários relacionados a taxas de suicídio, morte por suicídio, tentativas de suicídio, ideação suicida e/ou razão de chances (*Odds Ratio* - OR) acerca do risco de suicídio. Os artigos em que os participantes englobavam uma amostra mista de adultos e crianças não foram elegíveis, a menos que dados fossem apresentados separadamente.

Os critérios de exclusão foram: (a) revisões sistemáticas que incluíram apenas populações clínicas com transtorno mental diagnosticado, tentativa anterior de suicídio, automutilação ou ideação suicida conhecida; (b) revisões sistemáticas focando exclusivamente na prevenção do suicídio nos níveis secundário ou terciário; (c) revisões sistemáticas que investigaram a prevenção de automutilação não suicida; (d) dados primários de estudos observacionais, relatos de casos, comentários, cartas, diretrizes práticas e editoriais; (e) como nosso principal objetivo foi acessar as evidências de

eficácia nas estratégias de prevenção primária do suicídio, a revisão sistemática deveria incluir estudos de intervenção com dados quantitativos, portanto, estudos meta-resumo e meta-síntese de dados qualitativos foram excluídos.

Estratégia de busca

Os artigos sobre programas/políticas/intervenções de prevenção do suicídio foram buscados em cinco bases de dados: PubMed, EMBASE, Scopus, PsycINFO e Cochrane, desde o início até julho de 2021.

Para as bases de dados PubMed, Scopus, PsychINFO e Cochrane, nossa estratégia de busca combinou os seguintes termos do *Medical Subject Headings* (MeSH), usando operadores booleanos: *suicid* AND "primary Prevention" OR "preventive health services" OR "public health practice" OR "prevention e control"*. Adicionalmente, utilizamos as palavras-chave: *"universal prevention" OR "universal intervention"*. Para EMBASE, utilizamos os termos *Embase Subject Heading* (Emtree) compatíveis. Todos os termos de pesquisa tiveram o recurso de explosão para que termos aproximativos também pudessem ser incluídos. Os argumentos da estratégia de busca detalhados podem ser encontrados no Material Suplementar S1 do Artigo I.

A busca não teve restrições de idioma, data ou status de publicação, a fim de reduzir o viés de publicação. Quando possível, aplicamos o filtro da base de periódicos para artigos do tipo 'revisões sistemáticas'. Adicionalmente, identificamos artigos por meio de pesquisa manual, verificando a lista de referências de artigos encontrados, capítulos e da biblioteca dos autores. Também verificamos novamente as revisões sistemáticas incluídas em um artigo de *Overview* anterior (van der Feltz-Cornelis et al., 2011).

Seleção de artigos e extração de dados

Todos os artigos encontrados foram inseridos na plataforma *Rayyan QCRI* (rayyan.qcri.org/) (Ouzzani et al., 2016) e distribuídos de acordo com as diretrizes PRISMA (Page et al., 2021). Após a remoção das duplicatas, dois revisores independentes realizaram uma triagem conforme título e resumo da lista inicial de artigos. Quaisquer

conflitos sobre decisões de inclusão ou exclusão foram debatidos durante reuniões de discussão com o revisor sênior. Da mesma forma, os textos completos dos 66 artigos elegíveis também foram avaliados de forma independente pelos autores e todas as divergências foram resolvidas durante reuniões de com o autor sênior.

Posteriormente, dois revisores independentes extraíram informações usando uma versão modificada do Formulário de Extração de Dados do Instituto Joanna Briggs (JBI) para revisão de revisões sistemáticas e sínteses de pesquisa (Aromataris; Munn, 2020). Para a lista final de estudos incluídos, o formulário de extração de dados incluiu o desenho do estudo, tipo de intervenção, participantes, cenário, métodos, resultados e principais resultados.

Dados analisados

Os desfechos do presente estudo foram: (1) mudanças no número de mortes por suicídio ou (2) comportamentos suicidas. A morte por suicídio pode ser expressa como números absolutos, proporções ou taxas. No geral, a morte por suicídio foi medida a partir de registros administrativos da população em geral. Como diferentes autores adotam diversas nomenclaturas para relatar o resultado, definimos suicídio e comportamentos suicidas como termos genéricos para denotar todos os espectros de cognições e comportamentos suicidas, desde pensamentos, ideação, tentativas, planejamento e outras lesões auto infligidas. Os comportamentos suicidas foram avaliados por escalas autorreferidas, registros médicos e entrevistas com profissionais de saúde.

As intervenções e estratégias de prevenção primária/universal do suicídio, para os fins do presente estudo, foram definidas como abordagens com objetivo de prevenção do aparecimento de pensamentos suicidas e comportamentos suicidas, aplicadas antes que o comportamento suicida ocorra ou a ideação seja expressa (Suicide Prevention Action Network [SPAN USA], 2001; Wilcox; Wyman, 2015; Horowitz; Tipton; Pao, 2020). As intervenções descritas nas revisões sistemáticas foram organizadas em duas categorias mais amplas: (a) intervenções isoladas: estratégias aplicadas e avaliadas individualmente; (b) programas multicomponentes: programas de prevenção compostos por uma combinação de duas ou mais intervenções únicas diferentes. As principais intervenções e estratégias isoladas podem ser classificadas em quatro grupos, como segue:

- Conscientização e educação - campanhas com o objetivo de sensibilizar e melhorar o conhecimento sobre o suicídio e a busca de ajuda, favorecendo a compreensão dos fatores protetores e de risco para o comportamento suicida e adoecimento mental (Mann et al., 2005).

- Treinamento de *gatekeepers* - treinamento de *gatekeepers* (pessoas chave), geralmente em uma comunidade específica, para identificar indivíduos com alto risco de suicídio e encaminhá-los para tratamento (Isaac et al., 2009).

- Comunicações midiáticas - incluíram as diferentes formas de cobertura da mídia sobre morte por suicídio e comportamentos suicidas

- Restrições aos meios - diferentes formas de restringir o acesso a meios letais. Incluíram estratégias como leis (restringindo o acesso a álcool, armas de fogo e outros), instalação de barreiras em locais altos, armazenamento seguro de armas de fogo, mudanças na embalagem de comprimidos analgésicos, entre outros.

Avaliação de qualidade e risco de viés dos estudos

Para avaliar a qualidade metodológica dos estudos incluídos, usamos o *checklist* online "*A MeaSurement Tool to Assess Systematic Reviews*" (AMSTAR-2) (Shea et al., 2017). O AMSTAR consiste em uma lista de checagem de 16 itens (amstar.ca/Amstar_Checklist.php), que propõe uma avaliação crítica da qualidade das revisões sistemáticas, avaliando diferentes aspectos do estudo, desde o planejamento até a execução, como a questão de pesquisa, protocolo de revisão, seleção de artigos, estratégia de busca, critérios de inclusão e exclusão, extração de dados e avaliação de risco de viés. A lista de verificação AMSTAR categoriza a qualidade das revisões sistemáticas como: alta, moderada, baixa e criticamente baixa.

O risco de viés das revisões sistemáticas incluídas foi determinado usando a ferramenta "*Risk of Bias In Systematic Review"* (ROBIS) (Whiting et al., 2016). Essa ferramenta avalia, em três fases, o risco de viés de uma revisão e a relevância desta para a questão de pesquisa proposta. Na primeira fase, verifica-se a pertinência do estudo. Na

segunda, são investigadas as preocupações com o processo de revisão, por meio da análise dos critérios de elegibilidade, identificação e seleção dos estudos, coleta de dados, avaliação dos estudos, síntese e conclusões. A terceira fase avalia o risco geral de viés na interpretação dos achados e suas limitações. Após a avaliação, o ROBIS classifica o grau em que os métodos de uma revisão sistemática minimizam o risco de viés, e até que ponto a questão abordada pela revisão corresponde à questão de pesquisa inicial. Esta ferramenta categoriza o risco de viés como 'baixo', 'alto' ou 'indefinido'.

Todas as revisões sistemáticas incluídas foram avaliadas independentemente por dois revisores utilizando os instrumentos AMSTAR e ROBIS. As divergências de classificação foram conciliadas durante as reuniões de discussão com o revisor sênior.

Análise dos resultados

Como as intervenções, as populações-alvo e os resultados variam muito entre os estudos, não foi possível realizar uma síntese quantitativa de meta-analise, portanto, uma síntese narrativa dos resultados foi realizada para descrever os achados gerais. Sempre que possível, considerando os dados apresentados pelas revisões sistemáticas, interpretamos a magnitude do tamanho do efeito com base nos valores sugeridos por Cohen (1988) para *r*: 'pequeno efeito' para valores de 0,1 a 0,3; 'efeito intermediário' 0,3 a 0,5; 'efeito forte' 0,5 ou maior. Para uma apresentação organizada e padronizada dos resultados, os estudos foram agrupados em duas grandes categorias de intervenções: (a) intervenções isoladas e (b) programas multicomponentes. As intervenções isoladas foram então categorizadas em quatro subgrupos: conscientização e educação, treinamento de *gatekeepers*, comunicações midiáticas e restrições aos meios.

Estudo II

Descrição do estudo, composição da amostra e coleta de dados

O *I Levantamento Nacional Sobre o Uso de Álcool, Tabaco e Outras Drogas Entre Universitários das 27 Capitais Brasileiras* é um estudo epidemiológico, transversal de abrangência nacional sobre o uso de álcool, tabaco e outras drogas entre universitários.

A população-alvo foi definida como os universitários regularmente matriculados no ano letivo de 2009, em cursos de graduação presencial, de Instituições de Ensino Superior (IES) públicas e privadas, das 27 capitais brasileiras (Andrade; Duarte; Oliveira, 2010). Uma amostra probabilística e estratificada de IES públicas e privadas foi selecionada e recrutada em um processo de amostragem em dois estágios por conglomerados e estratificação. Com base nos dados obtidos pelo Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP), foi calculado o tamanho de amostra mínimo de 17.660 universitários, necessitando de 929 turmas, considerando um número médio de 19 alunos por turma.

A seleção da amostragem foi realizada em dois estágios. Primeiramente as IES foram selecionadas aleatoriamente por meio da lista de escolas, fornecida pelo Ministério da Educação do Brasil. Ao aceitarem participar da pesquisa, as IES forneciam uma relação de todos os cursos de graduação presenciais, o que permitia aos pesquisadores selecionarem aleatoriamente as classes. Neste estudo, definimos 'classe' como um grupo de alunos que frequentam uma determinada disciplina do curso de graduação. A coleta de dados foi finalizada em 2009.

Das 114 IES selecionadas, 100 concordaram em participar da pesquisa. A pesquisa foi realizada em 654 turmas, totalizando 12.856 universitários. Todos os alunos das turmas selecionadas foram convidados a se voluntariar. A taxa de resposta foi de 95,6% considerando os alunos que estavam em sala de aula durante a pesquisa. Como o tamanho das IES e das turmas nem sempre era o mesmo (em termos de número de alunos), esses conglomerados eram de tamanhos desiguais. Em termos gerais, o desenho amostral consistiu em uma amostra aleatória, estratificada por conglomerados de diferentes tamanhos, selecionada em dois estágios.

Para maior controle sobre a veracidade das respostas, foi incluída uma questão com uma substância de nome fictício (*Relevin*), cujo uso, quando respondido afirmativamente, invalidou e anulou o questionário inteiro. Desse controle foram excluídos 10 questionários, resultando em 12.711 sujeitos. Por fim, para o presente estudo, considerou-se apenas os respondentes da questão referente à ideação suicida. Sendo assim, a nossa amostra final foi composta por 12.245 estudantes.

Instrumento e coleta dos dados

O instrumento utilizado para a coleta de dados do *I Levantamento Nacional Sobre o Uso de Álcool, Tabaco e Outras Drogas Entre Universitários das 27 Capitais Brasileiras* foi um questionário contendo 98 questões fechadas. O questionário foi elaborado de forma que possibilitasse conhecer o perfil do estudante universitário, com ênfase em consumo de drogas e seus transtornos, incluindo comportamentos de risco, estilo de vida e existência de comorbidades psiquiátricas (sintomas depressivos, persecutórios, e sofrimento mental). O instrumento de pesquisa abordou informações que pudessem auxiliar na compreensão de tópicos diversos relacionados às questões de vida dos respondentes, como: (a) informações sociodemográficas e socioeconômicas; (b) caracterização do curso superior; (c) caracterização da vida acadêmica; (d) caracterização de atividades da vida diária; (e) fatores relacionados à saúde mental e consumo de substâncias. Para um levantamento acerca da prevalência de sintomas depressivos, persecutórios e sofrimento mental, foram incluídos no instrumento de pesquisa critérios de escalas específicas: Inventário de Depressão de Beck, versão II (BDI-II); Escala breve K6; e Experiências não-usuais do Self-Report Questionnaire (SRQ).

Após realizada a coleta de dados nas turmas selecionadas, os dados foram então digitados e foi criado um banco de dados no software SPSS Data Entry. Todas as inconsistências detectadas foram programadas no próprio software para serem solucionadas automaticamente, e perguntas não respondidas foram tratadas de forma a garantir que não tenha sido um campo que deixou de ser digitado pela equipe de digitação. Maiores detalhes podem ser encontrados em Andrade; Duarte; Oliveira (2010, p. 23-38). Para a análise de resultados do presente estudo foi utilizado este mesmo banco de dados já tratado e preparado anteriormente.

Para todas as análises do presente estudo, ideação suicida foi definida como o desfecho primário. A ideação suicida é um dos principais fatores associados a tentativas de suicídio e mortes (Franklin et al., 2017; Large; Corderoy; McHugh, 2021), considerada uma informação essencial para uma avaliação adequada do risco de suicídio e encaminhamento para tratamento (Jobes; Joiner, 2019; Hawton et al., 2022). Considerando que nem todos os indivíduos com ideação suicida se envolverão em comportamentos auto lesivos, a identificação precoce daqueles que estão considerando o

suicídio pode ajudar a oferecer intervenções oportunas e prevenir resultados trágicos (Harmer et al. 2024; Hawton et al., 2022).

O desfecho foi avaliado pelo item 9 do Inventário de Depressão de Beck-II (BDI-II), um instrumento de autorrelato validado para uso pela população de língua portuguesa do Brasil (Gomes-Oliveira et al., 2012). No item 9 do BDI-II, o indivíduo é solicitado a selecionar aquele que melhor descreve como se sentiu nas últimas duas semanas, com base nas seguintes afirmações: (0) “Não tenho pensamentos de me matar”; (1) “Tenho pensamentos de me matar, mas não faria isso”; (2) “Eu gostaria de me matar”; (3) “Eu me mataria se tivesse a chance”. Considerando a literatura prévia (Wenzel; Brown; Beck, 2010; American Psychiatric Association, 2013), optamos por uma definição ampla de ideação suicida, que inclui quaisquer pensamentos, crenças, desejos ou outras cognições de se matar, mesmo que a pessoa afirmasse que não realizaria. Assim, a pontuação do item 9 foi dicotomizada em uma variável “sim/não” para denotar a presença (≥ 1) ou ausência de ideação suicida, conforme adotado em estudos anteriores (Fitzpatrick; Witte; Schmidt, 2005; Arria et al., 2009; Farabaugh et al., 2012).

A Escala de Estresse Psicológico de Kessler K6 (Kessler et al., 2002) foi usada para rastrear sofrimento mental nos últimos 30 dias. Essa ferramenta possui seis perguntas em formato de escala *Likert*, que indicam a duração dos sintomas avaliados, de “sempre” (4) a “nunca” (0). A escala K6 foi projetada para ser sensível ao limiar de significância clínica do sofrimento psicológico (Kessler et al., 2010; National Comorbidity Survey, 2005). Quanto maior a pontuação, maior o nível de sofrimento, que é considerado um indicador de saúde mental. Para a presente análise, a pontuação nesta amostra brasileira foi dicotomizada de forma a indicar a presença (escore ≥ 6) ou ausência de sofrimento mental (M.C. Viana, comunicação pessoal).

As experiências não-usuais se referem a sintomas incomuns, relatados pelos alunos, por meio de quatro perguntas do *Self-Report Questionnaire* (SRQ). Os alunos foram solicitados a responder “sim” ou “não” às seguintes questões: (1) “*Sente que tem alguém que de alguma maneira quer lhe fazer mal?*”; (2) “*Você é alguém muito mais importante do que a maioria das pessoas pensa?*”; (3) “*Tem notado alguma interferência ou outro problema estranho com seu pensamento?*”; e (4) “*Ouve vozes que não sabe de onde vêm, ou que outras pessoas não podem ouvir?*”. A Organização Mundial da Saúde (OMS) recomenda o SRQ para detectar e classificar rapidamente indivíduos da

comunidade que apresentem sintomas persecutórios, especialmente em países em desenvolvimento (Harding et al., 1980; Salleh, 1990). As experiências não-usuais podem ser consideradas como um indicador de funcionamento psíquico reduzido (Unterrassner et al., 2017), desempenho social (Rössler et al., 2007) e saúde (Nuevo et al., 2012). Na perspectiva de van Os et al. (2008), uma proporção considerável de pessoas pode apresentar alguns dos sintomas descritos, porém sem relevância clínica. Para fins analíticos, os itens foram agrupados em uma variável dicotomizada para denotar a presença ou ausência de experiências não-usuais, como um *proxy* para sofrimento mental.

O questionário estruturado *Alcohol, Smoking, and Substance Involvement Screening Test* (ASSIST) foi utilizado para coletar informações sobre o uso de substâncias. O ASSIST abrange o uso de nove tipos de substâncias psicoativas. Para investigar a frequência de uso de cada substância, foi perguntado aos alunos "*quantas vezes você usou essa droga nos últimos 30 dias?*". As possíveis respostas variaram de 1 ("*não usei*") a 6 ("*4 vezes ao dia ou mais*"). Utilizamos dados sobre as substâncias com maiores frequências de uso pelos alunos: álcool, tabaco e maconha. Para a presente análise, os itens foram dicotomizados em variáveis do tipo "sim/não", de forma a denotar usuários e não usuários. O uso de álcool combinado com substâncias não prescritas (inalantes, maconha, cocaína, crack-cocaína, merla, anfetaminas, anticolinérgicos, tranquilizantes, analgésicos opiáceos, sedativos, esteroides anabólicos androgênicos, alucinógenos, ecstasy e drogas sintéticas) foi usado de forma a denotar o uso concomitante. Os alunos foram classificados em quatro subgrupos mutuamente exclusivos: não-usuários, usuários de álcool, usuários de drogas e uso concomitante de álcool e outras drogas, para se referir a: nenhum consumo de álcool ou drogas, qualquer frequência de uso apenas de álcool, uso de pelo menos uma das substâncias não prescritas (mas não de álcool), e uso concomitante de álcool e pelo menos uma outra droga, respectivamente.

Outras informações relevantes foram abordados na pesquisa por meio de questões individuais, como (a) a prevalência de comportamentos gerais de risco (ex.: envolvimento em brigas e discussões; comportamento de dirigir alcoolizado; pegar carona com motorista embriagado etc.), (b) uso de múltiplas substâncias, (c) curso universitário e vida acadêmica: área de estudo ("*Qual é a área de estudo de atuação do seu curso: (1)Ciências Biológicas e da Saúde, (2)Ciências Exatas, (3)Humanas*"), ano atual na faculdade/universidade ["*Qual o ano (ou semestre) que você está cursando?*"], período

do curso atual [“*O seu curso é em período integral?; “Se não é integral, em qual período você estuda*”), desempenho acadêmico do último semestre (“*No último semestre ou ano você: (1) Passou direto em tudo; (2) Pegou exame, mas passou nessas matérias; (3)Ficou de dependência, mas não perdeu o ano; (4) Repetiu o ano; (5) Outro*), atividades de sociabilização [*Com exceção do período em que você está de férias, a quais atividades costuma dedicar-se quando está fora da sala de aula? (1) Participo de organizações estudantis (Centro Acadêmico-CA/ Departamento Acadêmico-DA/Grêmio); (2)Participo de projetos acadêmicos orientados por um ou mais professores; (3) Participo de atividades físicas ou esportivas; (4) Participo de competições esportivas entre universidades; (5)Estudo além do horário da aula; (6)Interajo e passo tempo com os amigos; (7) Assisto TV ou vídeo/ DVD; (8) Jogo vídeo-game ou jogos de computador; (9) Utilizo a internet para diversão (sites de relacionamento, de bate-papo, músicas, jogos e outros tipos de entretenimento); (10) Envio e recebo emails; (11)Uso Messenger (MSN) ou outros tipos de mensagens instantâneas; (12) Outros hobbies (ler livros por lazer; tocar instrumentos musicais; participar de corais; desenhar; pintar entre outras atividades artísticas); (13) Trabalho voluntário; (14) Trabalho Remunerado].* pensamentos sobre trancar ou abandonar o curso, [*“Em relação ao seu curso de graduação (circule apenas uma resposta): (1) Nunca pensei em abandoná-lo ou trancar matrícula; (2) Já pensei em abandonar ou trancar matrícula; (3) Já tranquei matrícula alguma vez”] e satisfação atual com a graduação (“Você está satisfeito com a escolha de seu curso de graduação?*”)

Variáveis de interesse

Para o presente estudo foram considerados três grupos de variáveis independentes: (1) variáveis sociodemográficas, por exemplo, idade, sexo, classe econômica, raça/etnia, estado civil, religião, ter filhos, atividade remunerada e região do Brasil; (2) fatores clínicos, por ex. sofrimento psicológico; experiências não-usuais; consumo de álcool, tabaco e maconha, uso concomitante de álcool e drogas e bebedeira; comportamentos de risco e abuso sexual ao longo da vida; e (3) características acadêmicas, como área de estudo, ano atual na faculdade/universidade, número de disciplinas cursando, período do curso, tipo da IES (pública ou privada), desempenho acadêmico, desejo de abandonar ou trancar o curso (ao longo do curso) e satisfação com o curso de graduação. O Quadro 1

mostra um resumo das variáveis analisadas para associação com a presença de ideação suicida.

Quadro 1. Variáveis do "I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras" investigadas para associação com ideação suicida

Fatores Sociodemográficos
Idade, Sexo, Religião, Classe econômica[1], Etnia, Filhos, Atividade remunerada, Região do país
Fatores Clínicos
Uso de álcool, tabaco, e maconha/haxixe nos últimos 30 dias, *Binge drinking/Heavy drinking*[2] nos últimos 30 dias, Uso concomitante de álcool e outras substâncias nos últimos 30 dias (poliuso), Comportamentos gerais de risco, Histórico de abuso sexual, Sofrimento psíquico[3], Experiências não-usuais
Fatores acadêmicos
Área de atuação do curso, Ano/semestre, Período do curso, Satisfação com o curso, Histórico ou desejo de trancar ou abandonar o curso, Rendimento acadêmico no último semestre, Tipo de IES (pública ou privada), Número de disciplinas que está matriculado

[1] Conforme Critério Brasil de Classificação Econômica Brasil (ABEP, 2011)
[2] Conforme critérios do Centers for Disease Control and Prevention (CDC, 2019) e do National Institutes of Health (NIH/NIAAA, 2020)
[3] Kessler et al.., 2010; M.C. Viana, comunicação pessoal

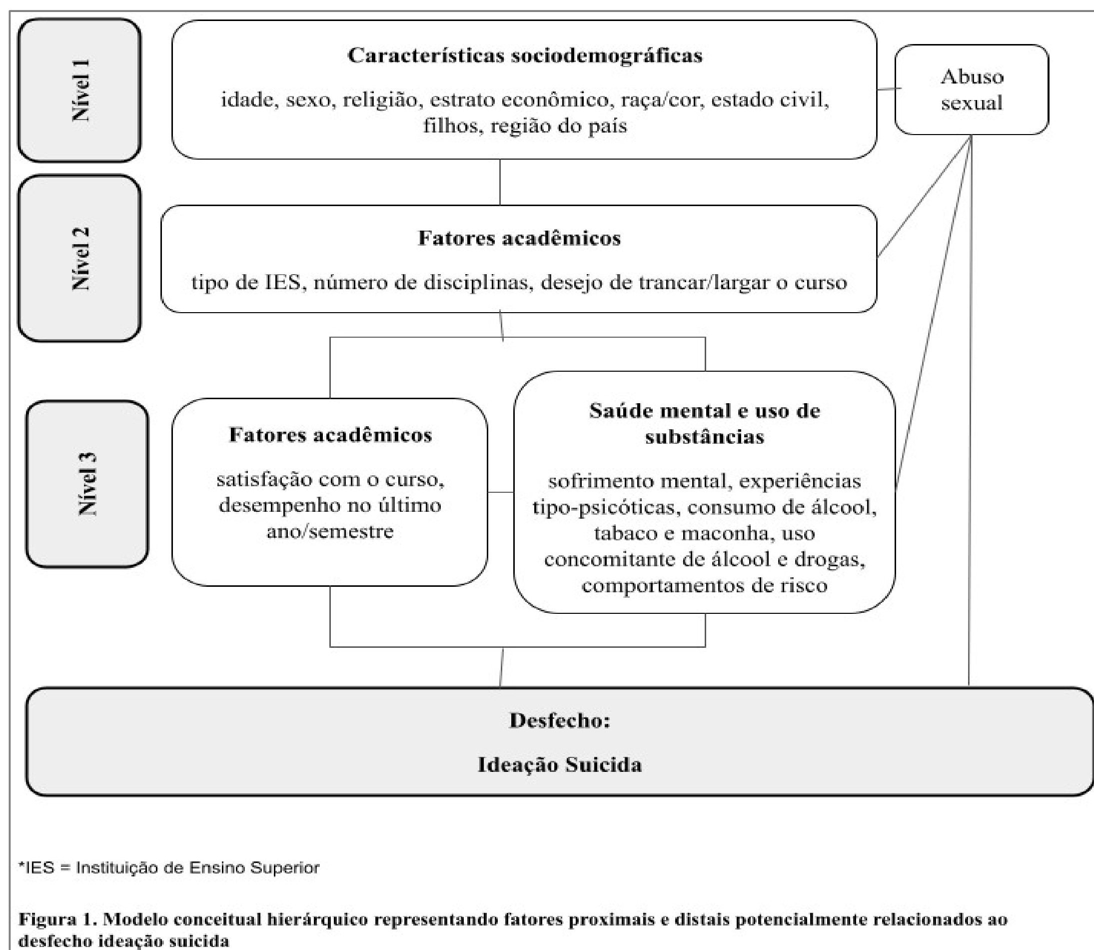
Análise Estatística

Inicialmente foi realizada uma estatística descritiva da amostra quanto à ideação suicida, variáveis sociodemográficas, acadêmicas, uso de substâncias, comportamentos de risco, e saúde mental. Foram feitas tabulações simples e, em seguida, cruzadas, com teste qui-quadrado de Pearson ($\chi2$) com correção de Rao-Scott (Rao; Scott, 1984) para examinar a associação entre as variáveis independentes e o desfecho.

Levando em conta as variáveis de nosso banco de dados, hipotetizamos um modelo conceitual-hierárquico (Victora et al., 1997) para guiar nossa regressão logística múltipla. A construção desse modelo hierárquico considerou: (1) faixa temporal de cada variável; (2) relação entre ideação suicida e as variáveis independentes na literatura prévia; (3) a cronologia da vivência dos alunos durante o período universitário.

A Figura 1 mostra nossa hipótese de modelo conceitual, em que as variáveis distais influenciam as proximais, nível a nível (Victora et al., 1997; Turecki et al., 2019). O primeiro nível incluiu características sociodemográficas (por exemplo, idade, sexo e estratos

econômicos). O tipo de IES foi entendida neste estudo como um *proxy* do status socioeconômico. O tipo de financiamento da IES, o número de disciplinas e o desejo de trancamento ou abandono foram incluídos no nível intermediário. A combinação de vulnerabilidades sociodemográficas e fatores contextuais acadêmicos pode prejudicar a motivação dos alunos, fortalecer sentimentos negativos e afetar os fatores proximais (Aggarwal et al., 2017). Sendo assim, o nível proximal incluiu outros fatores acadêmicos (satisfação com o curso e desempenho acadêmico), saúde mental e uso de substâncias. O baixo desempenho acadêmico e a insatisfação com o curso podem ser percebidos como ameaçadores/estressores (Ross; Niebling; Heckert, 1999; Beiter et al., 2015), desencadeando cognições suicidas e prejudicando a saúde mental (Cha et al., 2018; Poland; Ferguson, 2021). Finalmente, experiências traumáticas e abuso sexual na infância estão relacionados a doenças mentais e outros problemas na vida adulta (como tentativas de suicídio, dificuldades financeiras e problemas cumulativos ao longo da vida adulta) (McKay et al., 2022; Guiney et al., 2022). É possível concluir, portanto, que variável referente a abuso sexual ao longo da vida pode influenciar tanto as variáveis dependentes quanto as independentes, em todos os níveis da presente análise. Sendo assim, ‘abuso sexual’ foi entendida como uma variável de confusão no nosso modelo conceitual hierárquico.



*IES = Instituição de Ensino Superior

Figura 1. Modelo conceitual hierárquico representando fatores proximais e distais potencialmente relacionados ao desfecho ideação suicida

O modelo de regressão logística hierárquica foi usado para investigar fatores associados à ideação suicida, ajustando-os para covariáveis. Para obter uma representação abrangente, o modelo hierárquico para análise de regressão logística incluiu variáveis que obtiveram um valor de $p \leq 0,2$, ou com evidência de associação na literatura prévia, ou pela sua aplicabilidade clínica, conforme recomendado (Ughade, 2013; Hosmer; Lemeshow; Sturdivant, 2013). Na primeira etapa do modelo hierárquico analisamos as variáveis do primeiro nível, aquelas que se associaram ao desfecho com $p \leq 0,2$ foram mantidas. Em seguida, adicionamos as variáveis de segundo nível e assim sucessivamente, até o nível mais proximal. Para cada nível, as variáveis com valor de $p > 0,2$ foram removidas em seleção gradual, conforme recomendado pela literatura anterior para ajuste de modelos (Maldonado; Greenland, 1993; Wasserstein; Schirm; Lazar, 2019). O teste qui-quadrado de Wald ajustado (Judge et al., 1985; Korn; Graubard, 1990) foi realizado utilizando o comando '*testparm*', após a regressão logística, o que permite realizar um teste de hipótese nula para todas as categorias da variável, ajustado para as

demais variáveis do modelo, fornecendo um valor de *p* para a variável categórica testada (Daniels; Minot, 2019). Finalmente, a qualidade de ajuste do modelo final foi estimada com o teste de Hosmer-Lemeshow, com correção de Archer-Lemeshow (Archer; Lemeshow, 2006; Archer; Lemeshow; Hosmer, 2007; Heeringa et al., 2017). Para o modelo final ajustado, os coeficientes da regressão logística foram relatados como Razão de Chances (*Odds ratio* - OR) acompanhados dos respectivos intervalos de confiança (IC) de 95%.

As análises bivariadas e de regressão logística relatadas no **Artigo II** foram realizadas utilizando o software Stata, versão 15 (StataCorp, 2017). Todas as análises foram realizadas com a opção de pesquisa (comando 'svy'), que permitiu a correção com pesos, estratos e unidades primárias de amostragem para ajustar erros de amostragem e probabilidade desigual de seleção. A estimativa de prevalência e a análise de regressão foram apresentadas como proporções ponderadas para a população-alvo.

Na última etapa de análise dos dados (APÊNCIDE 2), foi realizada uma Análise de Classes Latentes (*Latent Class Analysis* - LCA), com o objetivo de identificar subgrupos, a partir de padrões de respostas dos estudantes a variáveis selecionadas do questionário aplicado. A partir de um conjunto de variáveis observadas, a LCA permite formar subgrupos mutuamente exclusivos (classes latentes) de acordo com padrões de respostas identificados entre os participantes do estudo. Este método possibilita a descrição de padrões que de outra forma seriam difíceis de descrever de forma útil, parcimoniosa e significativa (Nylund-Gibson, 2022). O modelo de classes latentes incluiu variáveis dependentes que poderiam indicar: (a) o ajustamento acadêmico dos alunos: pensamentos sobre abandono ou licença, satisfação atual com o curso escolhido; (b) indicadores de saúde mental: sofrimento psicológico do último mês; experiências não-usuais do último mês; uso de drogas não prescritas no último mês; beber pesado (*binge drinking)* no último mês. Também investigamos a associação entre as classes latentes extraídas com os desfechos: ideação suicida, sintomas depressivos e desempenho acadêmico, ajustando para covariáveis: idade, sexo, estrato econômico, financiamento de IES, atividade remunerada, religião, filhos e participação em atividades sociais. Para facilitar a leitura e a interpretabilidade dos resultados apresentados, optamos por denominar esse grupo de variáveis incluídas no modelo de LCA como "ajuste acadêmico e saúde mental".

A condução da LCA foi realizada em três passos, conforme recomendado pela literatura (Vermunt, 2010; Asparouhov; Muthén, 2014; Nylund-Gibson et al., 2019): (1) após comparar as diferentes possibilidades de solução, o melhor modelo foi escolhido conforme critérios estatísticos de informação, interpretabilidade e utilidade clínica (2) após identificadas as classes latentes, e avaliada a qualidade do modelo, os dados foram extraídos para um novo banco (3) e por fim análises de regressão logística foram conduzidas a fim de investigar as associações das classes latentes encontradas com os desfechos: ideação suicida, sintomas depressivos e desempenho acadêmico, ajustadas para as covariáveis. Também foram analisadas as associações das classes latentes com as covariáveis sociodemográficas e atividades de sociabilização. O modelo LCA foi construído com base em nossos achados anteriores acerca de associações de ideação suicida com características acadêmicas e indicadores de saúde mental (Altavini et al., 2023). Adicionalmente, consideramos informações estatísticas sobre a qualidade dos itens individualmente. A entropia univariada – também considerada entropia específica de variável – fornece informações sobre o quanto cada indicador contribui para a diferenciação das classes. Quanto maior o valor, melhor o indicador na identificação das classes. Indicadores com valores de entropia univariada próximos de zero foram retirados do modelo de LCA (Asparouhov; Muthén, 2018).

Todas as análises relacionadas à LCA foram realizadas no software estatístico MPlus, versão 8.10 (Muthén; Muthén, 1998-2017; Muthén; Muthén, 2023), com a aplicação de pesos de correção para ajustar o erro amostral e a probabilidade desigual de seleção. Os coeficientes de regressão logística são relatados como odds ratio (OR), com intervalos de confiança (IC) de 95%. Resultados preliminares podem ser encontrados no APÊNDICE 2.

Aspectos éticos

Os dados utilizados no presente estudo serão originários do *I Levantamento Nacional Sobre O Uso de Álcool, Tabaco e Outras Drogas Entre Universitários das 27 Capitais Brasileiras* (n=17.573), aprovado pelo Comitê de Ética em Pesquisa (CEP) da Faculdade de Medicina da Universidade de São Paulo (FMUSP) /Hospital das Clínicas (HC/FMUSP) e pela CAPPesq, (protocolo n° 0378/08). O presente projeto foi aprovado pelo Comitê de Ética em Pesquisa (CEP) da Faculdade de Medicina da Universidade de

São Paulo (FMUSP) /Hospital das Clínicas (HC/FMUSP) e pela CAPPesq, parecer n° 4.711.369, CAAE: 45816621.8.0000.0068 (ANEXO C).

2 PRODUÇÃO CIENTÍFICA

2.1 Artigo I: Revisiting evidence of primary prevention of suicide among adult populations: A systematic overview

Altavini, C. S., Asciutti, A. P. R., Solis, A. C. O., & Wang, Y.-P. (2022). Revisiting evidence of primary prevention of suicide among adult populations: a systematic overview. *Journal of Affective Disorders*, *297*, 641–656. https://doi.org/10.1016/j.jad.2021.10.076

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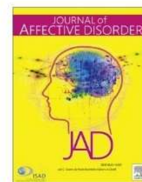

Revisiting evidence of primary prevention of suicide among adult populations: A systematic overview

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ABSTRACT

Backgrounds: : Primary prevention of suicidal behaviors in the general population is required to interrupt the trend of self-inflicted deaths worldwide. We reviewed the evidence of the efficacy of primary prevention of suicide among the adult population.
Methods: : This is an overview of systematic reviews. We searched PubMed, EMBASE, Scopus, PsycINFO, and Cochrane databases to identify articles on suicide prevention strategies in non-clinical populations. For the purpose of overview, only systematic reviews were eligible. Primary outcomes: The outcomes of the present study were changes in the number of suicide death or suicide behaviors. Two reviewers assessed the methodological quality and the risk of bias of included studies.
Results: : From the initial 2,315 records, 32 articles met inclusion criteria. Evidence of reduction of suicide-related outcomes was detected, but of small magnitude. Most multicomponent prevention programs were delivered to specific populations, comprising strategies such as restriction to lethal means, educational programs, and gatekeeper training. Means restriction was the single intervention that showed some evidence of individual efficacy in reducing suicide. There is evidence that poor quality of media reporting is related with increasing suicide and better-quality reports could help suicide prevention. Most of the included SRs were of critically-low methodological quality.
Limitations: : Publication bias, reporting bias, study designs, outcome definition and article overlap across studies are the main concerns.
Conclusions: : Multicomponent programs and means restriction have indicated a reduction of suicide rates, mainly in specific populations. There is insufficient evidence to recommend a widespread implementation of suicide primary prevention in the general population.

1. Introduction

Suicide is a potentially preventable cause of premature death and its prevention is a global imperative, from the health care and public mental health perspectives (Wasserman, 2016). Although a recent analysis from the Global Burden of Disease project has indicated that age-standardized mortality rates for suicide have decreased by 32.7% between 1990 and 2016 (Naghavi, 2019), suicide subsists as a substantial contributor to mortality worldwide. Since 2008, the World Health Organization (WHO) launched the Mental Health Gap Action Program (mhGAP) and established suicide as one of the priority conditions to be monitored (Keynejad et al., 2018). Reducing death by suicide is one (target 3.4.2) of the 17 targets of the United Nations' Sustainable Development Goals (SDGs) (United Nations (UN) 2015). According to WHO (World Health Organization 2018), only 20.6% of its member countries have developed nationwide suicide prevention plans and guidelines, thus evidence-based technical guidance for reducing suicide rates in the general population is still scant. Following the expectation that expansion of services and care provision in mental health is the cornerstone for sustainable human development, the suitability of implementing suicide prevention to the community requires reliable scrutiny.

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Interventions and strategies used in suicide prevention programs might be categorized according to the moment it is applied or the type of target population. Primary prevention of suicide is composed of interventions that are applied before suicide behavior occurs or ideation is expressed (SPAN USA, Inc 2001; Wilcox and Wyman, 2015; Horowitz et al., 2020). Common primary interventions include means restrictions, media coverage of suicide, educational policy, gatekeeper training, screening for risk factors, raising awareness, and mental health promotion, among others (SPAN USA, Inc 2001; Harrod et al., 2014). Currently, most of the strategies with some evidence of efficacy come from secondary and tertiary levels of prevention (du Roscoät and Beck, 2013; Harrod et al., 2014; Wilcox and Wyman, 2015), which are respectively related to previous knowledge of the individual's high risk and directed to those who explicitly expressed suicidal ideation or made a suicide attempt (van der Feltz-Cornelis et al., 2011). Some authors regard that primary prevention and health promotion are more promising strategies to reduce suicide deaths than focusing only on high-risk individuals as a secondary preventive strategy (Yip, 2011; Mulder, 2020; Sinyor and Schaffer, 2020). Most people who present suicidal thoughts do not receive or seek help in mental health care services (Michelmore and Hindley, 2012; Hom et al., 2015; Piscopo et al., 2016). Therefore, the integration of both primary and secondary levels of prevention might enhance the identification and access to mental health care by vulnerable people (Hawton and van Heeringen, 2009; Sinyor and Schaffer, 2020).

Among available individual interventions for suicide prevention, restricting access to lethal means is one of the most recommended strategies (Hawton and van Heeringen, 2009; World Health Organization 2014; Zalsman et al., 2016). Some countries, such as Australia (National Mental Health Commission, 2017), England (Department of Health and Social Care, 2019), Portugal (Direção-Geral da Saúde, 2013), and United States (Centers for Disease Control and Prevention (CDC) 2021), have developed local protocols and guidelines for suicide prevention, including limiting access to pesticides, medications, firearms, and also erecting barriers at potential suicide spots (Kreitman, 1976; Bennewith et al., 2007; Routley, 2007; Razvodovsky, 2009). Nevertheless, the results vary across strategies, countries, and cultures (Hawton and van Heeringen, 2009; Fazel and Runeson, 2020). The individual effect of each intervention in lowering suicide-related outcomes is unclear. Some studies suggest that multicomponent programs of individual interventions might reach better results than single-intervention strategies (van der Feltz-Cornelis et al., 2011; Clifford et al., 2013; Hofstra et al., 2020). Key ingredients for the success of multicomponent suicide prevention are a matter that remains to be explored.

Evidence on the effectiveness of prevention interventions and programs at the primary level is still lacking. Systematic reviews (SR) are one of the main study designs that endorse evidence-based practice and are essential for the development of health care guidelines and policies (Nelson, 2014). Considering available findings on the effectiveness of suicide prevention, we conducted a systematic overview. The primary purpose of present overview is to summarize primary prevention strategies and programs for suicide among adults, and to access the evidence of effectiveness and of such interventions. Specifically, we investigated (1) the impact of single interventions such as means restrictions, media coverage of suicide, educational policy, and gatekeeper training on suicide outcomes, and (2) the effect of multicomponent compared to single interventions on suicide in adult population. The present review contributes to the existing knowledge corpus on suicide by focusing on the applicability of strategies of primary prevention and the strength of previous evidence through established tools.

2. Methods

The present overview has strictly followed a methodology of systematic review (Grant and Booth, 2009; Nelson, 2014; Aromataris and Munn, 2020) and has adhered to the guideline of Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) (Page et al., 2021). During the planning stage, a study protocol was registered in the York University's Prospective Register of Systematic Reviews - PROSPERO (www.crd.york.ac.uk/PROSPERO), under the registration number CRD42020203661.

The present review investigates the effect and the evidence level of suicide prevention programs, policies, and interventions on suicide outcomes among community-dwelling adults. The PICO components of the review included: non-clinical adult **P**opulation, who were subjected to one or more **I**nterventions (prevention programs/policies) or **Expo**sures (control strategies of populations, e.g., firearm access and media reporting). Whenever possible, the intervention should be **C**ompared with subjects not submitted to the program/policy/intervention or without intervention at all, for assessing suicide-related **O**utcomes (e.g., changes in the suicide rate, number of suicide attempts, or number of visits to emergency services due to suicide attempts). To synthesize existing practices in the field in a single overview, the **T**ype of eligible article was systematic review, with or without meta-analysis.

2.1. *Study design*

Systematic and meta-analytic reviews are at the highest level of scientific evidence, because they use rigorous methods to collect and synthesize information to answer important questions and develop clinical practices and policies (Grant and Booth, 2009; Nelson, 2014). They are fundamental to establish trustworthy guidelines for many governmental groups and professional societies (Briss et al., 2000; Oxford Centre for Evidence-based Medicine 2009; Institute of Medicine (IOM) 2011).

An overview is a particular type of review - a review of reviews or a meta-review. This type of systematic review is also known as "systematic review of systematic reviews" or "umbrella review" (Becker and Oxman, 2008; Aromataris and Munn, 2020). This relatively new method aims to achieve a high level of evidence by using a thorough methodology to gather and assess existing data from multiple SRs, which are comprehensively synthesized in a single document (McKenzie and Brennan, 2017).

With an overview, health professionals can access multiple studies as a comprehensive summary of a topic area, as well as the evidence of existing interventions for a particular question (Becker and Oxman, 2008; Grant and Booth, 2009; Aromataris and Munn, 2020). Frequently, evidence-based health decisions set a higher standard for patient care than those that do not follow this approach (Nelson, 2014). Even though SRs are deemed as the standard for routine practice, the quality of those studies can vary greatly. Consequently, the conclusions reached by similar studies are sometimes divergent (Manchikanti et al., 2009). Different findings and conflicting conclusions could be reputed to heterogeneous methodologies, outcomes, and target populations assessed across studies. This overview revisits existing SRs so far on primary prevention of suicide among adults and evaluates methodological aspects to shed light on their strength of evidence.

2.2. *Eligibility criteria*

For inclusion, the article must (a) be a systematic review, with or without meta-analysis, or a systematic review with mixed methods; (b) investigate suicide primary prevention programs, policies, and interventions; (c) target non-clinical adult population; (d) report as primary outcomes suicide rates, suicide death, suicide attempts, suicide ideation and/or, odds ratio (OR) on suicide risk. Those articles wherein participants encompassed a mixed sample of adults and children were not eligible unless separate data was comprehensively presented.

Exclusion criteria were: (a) SRs that have approached solely clinical participants with a diagnosed mental disorder, previous suicide attempt, self-harm, or known suicidal ideation; (b) SRs focusing solely on suicide prevention on the secondary or tertiary levels; (c) SRs approaching the

prevention for non-suicidal self-injury; (d) primary data of observational studies, case reports, comments, letters, practice guidelines, and editorials; (e) because our main goal is to access the evidence of efficacy on suicide primary prevention strategies, the systematic review must include intervention studies with quantitative data, therefore meta-summary and meta-synthesis of qualitative data studies were excluded.

2.3. Information sources

We searched articles in PubMed, EMBASE, Scopus, PsycINFO, and Cochrane databases on the suicide prevention program/policy/intervention, from inception to July 2021.

2.4. Search strategy

For PubMed, Scopus, PsychINFO, and Cochrane databases our search strategy combined the following Medical Subject Headings (MeSH) terms, using Boolean operators: suicid* AND "primary prevention" OR "preventive health services" OR "public health practice" OR "prevention and control". Additionally, we utilized the key words: "universal prevention" OR "universal intervention". For EMBASE, we utilized the compatible Embase Subject Heading (Emtree) terms. All search terms held the feature of explosion so that approximative terms also could be included. The arguments of the search strategy can be found in **Supplementary Material S1**.

We did not restrict our search by language, date, or publication status, in order to reduce publication and retrieval bias. When possible, we applied the database filter for systematic reviews. We identified articles through hand searching, by checking the reference list of retained articles, chapters, and from the authors' library. We also double-checked included SRs in a previous overview article (van der Feltz-Cornelis et al., 2011).

2.5. Selection and data collection process

All retrieved articles were uploaded to Rayyan QCRI (rayyan.qcri.org/) (Ouzzani et al., 2016) platform and displayed under PRISMA guidelines (Page et al., 2021). After the removal of duplicates, two authors (C.S.A. and A.P.R.A.) independently scanned the Title and Abstract of the initial list of returned articles. Any conflicts over inclusion or exclusion decisions were reconciled during discussion meetings with the senior author (Y.P.W.). Likewise, the full texts of the 66 eligible articles also were independently assessed by the authors and all disagreements were resolved during panel discussion meetings with the senior author.

Thereafter, two authors independently extracted information using a modified version of the Joanna Briggs Institute (JBI) Data Extraction Form for Review for Systematic Reviews and Research Syntheses (Aromataris and Munn, 2020). For the final list of retained studies, the form included study design, intervention type, participants, setting, methods, outcomes, and key results.

2.6. Data items

The outcomes (or outcome domains) of the present study were: (1) changes in the number of suicide death or (2) suicide behaviors.

Suicide death can be expressed as absolute numbers, proportions or rates. Overall, suicide death was measured from administrative registers of the general population. Because different authors adopt diverse nomenclatures to report the outcome, we define suicide and suicidal behaviors as a generic umbrella term to denote all spectra of suicide-related cognitions and behaviors, from thoughts, ideation, attempts, planning, and other self-inflicted injuries. Suicide-related behaviors were assessed by self-reported scales, medical records, and interviews with health professionals.

Interventions and strategies of primary prevention of suicide for the purposes of the present study was defined as approaches aiming to prevent the onset of suicidal thoughts and suicide behaviors, applied before suicide behavior occurs or ideation is expressed (SPAN USA, Inc 2001; Wilcox and Wyman, 2015; Horowitz et al., 2020). The interventions described in the SRs were organized in two broader categories: (a) single interventions: individually applied and evaluated strategies; (b) multicomponent programs: prevention programs composed by a combination of two or more different single interventions. The main single interventions and strategies can be classified into four groups, as follows:

- Awareness and education - campaigns aiming to raise awareness and improve knowledge of suicide and help-seeking, favoring the understanding of protective and risk factors for suicidal behavior, particularly mental illness. (Mann et al., 2005)
- Gatekeeper training - training key people, usually in a specific community, to identify individuals at high risk for suicide and to refer them for treatment (Isaac et al., 2009).
- Media reports - included the different ways of media coverage of suicide death and suicidal behaviors
- Means restrictions - understood here as different ways to restrict access to lethal means. Included strategies such as laws (restricting access to alcohol, firearms, and others), erection of barriers in jumping spots, safe storage for firearms, changes in the package of analgesic pills, among others.

2.7. Study risk of bias assessment

We used the online checklist "A MeaSurement Tool to Assess Systematic Reviews" (AMSTAR-2) (Shea et al., 2017) to assess the quality of retained SRs. The 16-item AMSTAR checklist (amstar.ca/Amstar_Checklist.php) proposes a critical appraisal of the quality of SRs, assessing different aspects of the study, from planning to execution, such as the research question, review protocol, study selection, search strategy, inclusion and exclusion criteria, data extraction and risk of bias assessment. The AMSTAR checklist calculates and categorizes the quality of SRs as follows: high, moderate, low, and critically low.

The risk of bias of the included SR's was determined using the Risk of Bias In Systematic Review (ROBIS) tool (Whiting et al., 2016). ROBIS evaluates four categories of reviews within health care settings: interventions, diagnosis, prognosis, and etiology. This tool assesses in three phases both the risk of bias in a review and the relevance of a review to the proposed research question. In the first phase, the relevance of the study is checked. In the second, concerns with the review process are investigated, through the analyses of eligibility criteria, identification and selection of studies, data collection, study appraisal, synthesis, and findings. The third phase evaluates the overall risk of bias in the interpretation of findings and their limitations. After the assessment, the ROBIS addresses the degree to which the methods of an SR have minimized the risk of bias and the extent to which the research question addressed by the SR matches the research question. This tool categorizes the risk of bias as low, high, or unclear.

All included SRs were independently assessed by two authors regarding AMSTAR and ROBIS. Rating disagreements were reconciled during discussion meetings with senior authors.

2.8. Synthesis methods

Because interventions, target populations, and outcomes vary across studies, the synthesis with meta-analysis reporting could not be performed, therefore a narrative synthesis of results was conducted to describe the overall findings. Whenever possible, considering the data presented by the SRs, we interpreted the magnitude of effect size based on benchmarks suggested by (Cohen, 1988). The effect size measure expresses the magnitude of the difference between two groups in standard deviation units. Cohen suggested criteria reports the following intervals for r: small effect for values from 0.1 to 0.3; intermediate effect

0.3 to 0.5; strong effect 0.5 and higher. As described in the 'Data items' section, to help organize the results, studies were grouped into two broad categories of interventions: (a) single interventions and (b) multicomponent programs. The single interventions were then categorized in four sub-groups: awareness and education, gatekeeper training, media reports, and means restrictions.

3. Results

3.1. Study selection

Fig. 1 shows the PRISMA flow diagram of the retrieved articles in this overview. Initially, we identified 2315 records after searching in five electronic databases. Further 16 records were identified outside electronic databases, of which 11 were through hand search and five from references of previous overview articles. After the removal of duplicates, a total of 2101 records remained and were screened for inclusion by Title and Abstract. In this stage, 66 eligible articles were retained for full-text reading and scanned according to inclusion and exclusion criteria. In total, we excluded 33 articles because six were not SR, six presented mixed data of adult and non-adult samples, 11 were not a primary prevention study, five targeted the wrong population (non-adult, clinical, or both), four evaluated the wrong outcomes (e.g., help-seeking behavior, resilience, self-efficacy, and others), and one was not a systematic review of intervention studies. The list of excluded articles, with reasons for exclusion, can be found in **Supplementary Material S2**.

Accordingly, we included 32 SRs in the final list for narrative synthesis. Because interventions, target populations, and outcomes were heterogeneous, we did not conduct a meta-analysis. A narrative synthesis of the results is presented next.

3.2. Study characteristics

Table 1 summarizes the characteristics and methods of the 32 retained SRs. The studies were published between 2005 and 2021, all written in English. From the total, four studies performed a quantitative synthesis with meta-analysis in addition to an SR. While the majority of studies ($k = 19$, 59.4%) (Hahn et al., 2005; Mann et al., 2005; Bohanna and Wang, 2012; Sisask and Värnik, 2012; Cox et al., 2013; Havârneanu et al., 2015; Zalsman et al., 2016; Barker et al., 2017; Gunnell et al., 2017; Torok et al., 2017; Reifels et al., 2019; Violano et al., 2018; Pirkis et al., 2019; Kõlves et al., 2019; Ishimo et al., 2021; Melia et al., 2018; Okolie et al., 2020a, 2020b; Mann et al., 2021) investigated the effect of primary prevention for suicide in the general population, the remaining studies ($k = 13$, 40.6%) targeted specific populations: workers (Takada and Shima, 2010; Milner et al., 2015), military personnel (Bagley et al., 2010; Isaac et al., 2009; Nelson et al., 2017; Rostami et al., 2021), indigenous people (Clifford et al., 2013; Nasir et al., 2016; Leske et al., 2020), students (Harrod et al., 2014; Witt et al., 2019), employees of health care/protective services (Isaac et al., 2009; Witt et al., 2017; Dabkowski and Porter, 2021).

Regarding the intervention investigated, the majority ($k = 19$) of the studies evaluated the evidence on single intervention strategies, while the remaining 13 SRs focused on multicomponent programs. Almost all studies focusing on specific populations ($k = 11$) investigated the evidence on multicomponent programs. On the other hand, most of the studies targeting the general population ($k = 17$) evaluated the evidence of single interventions. The multicomponent suicide prevention programs were mostly composed by strategies such as means restriction, awareness, education, gatekeeper training, and mental health promotion. While five SRs (Cox et al., 2013; Havârneanu et al., 2015; Barker et al., 2017; Okolie et al., 2020a, 2020b) have focused on single intervention strategies of hotspots, Mann et al. 2005; Mann et al., 2021) evaluated several single interventions, and each of the other 12 SRs assessed the evidence of one single intervention type, such as: firearms restriction (Hahn et al., 2005; Violano et al., 2018), gatekeeper training (Isaac et al., 2009; Nasir et al., 2016), the influence of media coverage on suicidal behaviors (Bohanna and Wang, 2012; Sisask and Värnik, 2012; Torok et al., 2017; Pirkis et al., 2019), pesticides restrictions (Gunnell et al., 2017; Reifels et al., 2019), alcohol policies (Kõlves et al., 2020), and mobile health technology (Melia et al., 2018). The main measures to

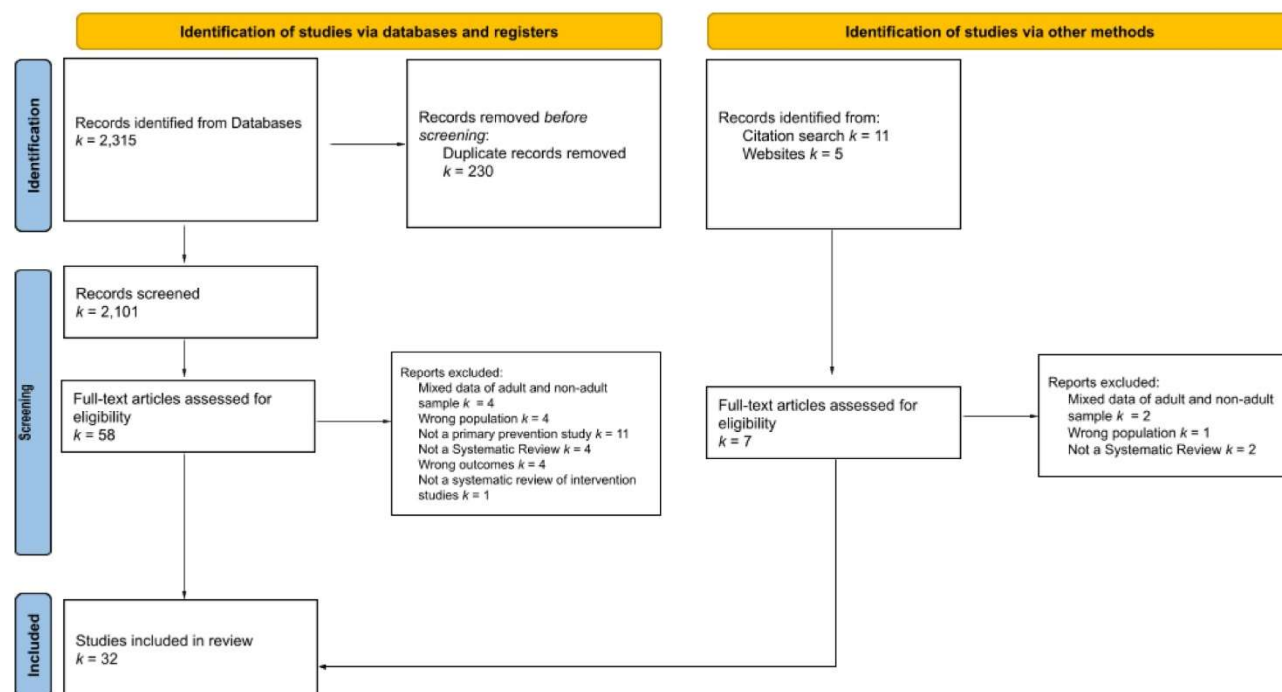

Fig. 1. PRISMA flow diagram of stuy selection.

Table 1
Characteristics of 32 eligible systematic reviews on the suicide primary prevention.

Author/ Year	Study type	Target Population	Intervention	Study designs	N	Outcome	Main findings	Assessment of quality and bias	Interpretation
Multicomponent program									
Bagley 2010	SR	Veteran and military population	Multicomponent program	RCT NRSI	7	Suicide rates Attempted suicide	Multicomponent programs reduced suicide rates in active military personnel There were no results of these programs among veterans.	GRADE	Overall, the quality of the analysis reports of the included studies was poor.
Takada 2010	SR	Workers	Multicomponent program	RCT NRSI	34	Suicide rates Suicidal behaviors	No relevant studies have invetigated suicide in workplace	NR	The program reduced undesirable attitudes and increased mental health knowledge.
Clifford 2013	SR	Indigenous people	Multicomponent program	NRSI	9	Suicide deaths Attempted suicide Suicide behaviours	Community-based program reduced suicide. Culturally-tailored program reduced suicidality and risk factors	EPHPP Quality Assessment Tool	Culturally-specific program for groups at risk of suicide are promising.
Harrod 2014	MA	Post-secondary students	Multicomponent program	RCT NRSI	8	Suicide deaths Attempted suicide	Means restriction lowered the incidence of suicide Gatekeeper training program did not change suicide	GRADE	Evidence on suicide outcomes is insufficient. Classroom instruction and gatekeeper training increased suicide-related knowledge.
Milner 2015	SR	Workers	Multicomponent programs	NR	13	Suicide rates Suicide deaths	Effect in reducing suicide in specific occupational contexts (police and air force)	NR	There is a lack of information on the evaluation of workplace suicide prevention activities.
Zalsman 2016[1]	SR	General population	Multicomponent program Means restriction Awareness and education Media reports Screening	MA RCT NRSI	164	Suicide deaths Attempted suicide Suicide ideation	Means restriction reduced suicide deaths. Awareness and education reduced suicide attempts and ideation	CEBM	Multicomponent programs should target specific populations with robust research designs.
Witt 2017	MA	Employees in emergency and protective services	Multicomponent program	RCT NRSI	13	Suicide rates	Significant decrease in suicide rates among military and police personel	GRADE GRACE	Multicomponent program targeting work-related stressors may improve suicide prevention effectiveness.
Nelson 2017	SR	Veteran and military population	Multicomponent program	SR RCT NRSI	19	Suicide rates Attempted suicide	Population-level interventions lowered suicide rates.	Cochrane Handbook for SRs USPSTF Quality of prognosis studies on SRs[2]	Evidence is low for suicide outcomes and insufficient for suicide attempt.
Witt 2019	MA	Medical students	Multicomponent program	RCT NRSI	39	Suicide ideation	Moderate reduction suicidal ideation after psychoeducation	RoB ROBINS-I NOS	Psychoeducation presents a short-term effect on risk factors, such as depression, anxiety, and stress.
Leske 2020	SR	Indigenous people	Multicomponent program	RCT NRSI	24	Suicide deaths Attempted suicide Suicide ideation	Multilevel programs reduced suicide deaths and attempts Suicidal ideation lowered after psychoeducational intervention	RoB RoBANS	The findings supports multilevel multicomponent program to reduce suicide attempts, despite limited evidence.
Dabkowski 2021	SR	Mental health nurses	Multicomponent program - Zero Suicide model	RCT NRSI	14	Suicide rates	Limited studies about the evaluation of the Zero Suicide model.	CASP	Most studies evaluate suicide-related knowledge outcomes.
Ishimo 2021	SR	General population (OECD countries)	Multicomponent programs Physical barriers Laws and regulations Media reports Access to healthcare	NRSI	100	Suicide rates	Physical barriers and law and regulations are effective in reducing suicides Media reports and multicomponent	EPHPP Quality Assessment Tool	The effectiveness of the interventions vary by intervention type, follow-up period, and sex.

(continued on next page)

Table 1 (*continued*)

Author/ Year	Study type	Target Population	Intervention	Study designs	N	Outcome	Main findings	Assessment of quality and bias	Interpretation
							programs had limited evidence		
Rostami 2021	SR	Military population	Multicomponent program	RCT NRSI	18	Suicide deaths Suicidal ideation Suicidal behavior	Community-based intervention reduced suicidal ideation, behavior, and death.	Adjusted Downs and Black Quality Assessment Checklist	The findings support the efficacy of community-based interventions.
Single intervention									
Mann 2005	SR	General population	Awareness and education Physician education Gatekeeper training Means restriction Media reports	MA RCT NRSI	93	Suicide deaths Attempted suicide Suicide ideation	Education of physicians and means restriction could prevent suicide	CEBM	Awareness and education had insufficient evidence. Media can help or hinder suicide prevention, insufficient evidence.
Hahn 2005	SR	General population	Firearms laws	NRSI	49	Suicide rates	Effect of firearms laws on suicide rates is unclear	Community Guide[3]	More research should investigate how laws can affect firearm-related injuries and deaths.
Isaac 2009	SR	Physicians and Air Force personnel	Gatekeeper training	NRSI	13	Suicide deaths Attempted suicide Suicide rate	Significant and non-significant reduction on suicide acts and suicide rates.	CEBM	Gatekeeper training is successful at imparting knowledge, building skills and molding attitudes.
Bohanna 2012	SR	General population	Media coverage	NR	11	Suicide rates	Studies suggest an association between the implementation of media guidelines and the reduction of suicide rates	NR	Active dissemination strategy, media industry endorsement, and ongoing training/ monitoring are crucial to media guidelines effectiveness.
Sisask 2012	SR	General population	Media coverage	NR	56	Suicide deaths Attempted suicide Suicide ideation	Media reports can provoke suicidal behaviors Quality and content of the reports might have protective effect	NR	The findings support that media coverage of suicide behaviors is associated with suicidality.
Cox 2013	SR	General population	Hotspots interventions: Means restriction Encouraging help-seeking Media coverage	NRSI	19	Suicide rates Suicide deaths Attempted suicide	Physical barriers, signs and telephones, and likelihood of intervention by others are effective.	NR	Evidence is weak for other interventions Responsible media might reduce suicide rate.
Havârneanu 2015	SR	General population	Railway interventions: Means restriction Gatekeeper training Education and awareness	NRSI	22	Suicide rates Suicide deaths Attempted suicide	Means restriction and gatekeeper training are effective. Communication and education might be effective when combined with other strategies	NR	Other interventions show promising results, but more studies and evaluation are needed
Nasir 2016	SR	Indigenous people	Gatekeeper training	RCT NRSI	6	Suicidal ideation	Gatekeeper training had no efficacy in reducing suicidal ideation	NR	Most studies show efficacy for changes in knowledge or attitudes, rather than behavior.
Barker 2017	SR	General population	Safety measures on railway: Means restriction Media reports	NRSI	9	Suicide rates Suicide deaths	Means restriction reduced suicide. Suicide pits reduced the lethality of attempts.	NR	Media guidelines may help to prevent suicide.
Gunnell 2017	SR	General population	Means restriction to pesticides	RCT NRSI	27	Suicide rates	Bans are more effective than sales restrictions in reducing suicide	Cochrane Effective Practice and Organization of Care	The effectiveness of the restriction is affected by enforcement, trade across borders, and residual stocks of the product.

(continued on next page)

Table 1 (*continued*)

Author/ Year	Study type	Target Population	Intervention	Study designs	N	Outcome	Main findings	Assessment of quality and bias	Interpretation
Torok 2017	SR	General population	Media campaigns (Education/ Awareness)	RCT NRSI	13	Suicide deaths Suicidal ideation Attempted suicide	Limited efficacy in creating behavioral change	NR	Stronger evidence of efficacy on knowledge and help-seeking. Increased efficacy when it is a part of a multicomponent approach.
Melia 2018	SR	General population	Mobile health technology	RCT NRSI	7	Suicide ideation Suicidal behavior	Limited evidence on the efficacy of apps	Cochrane Collaboration's Risk of Bias Tool\ ROBINS-I	Some efficacy in high risk individuals, as an adjunct to face-to-face therapy Positive effects in increasing coping and self-efficacy, also in reducing depression and anxiety
Violano 2018	SR	General population	Firearm storage and safety devices	RCT NRSI	7	Suicide deaths Attempted suicide Suicide ideation Suicide rates	Increased risk and mortality are associated with firearms availability and unsafe storage	GRADE	Recommend using safe storage for firearms.
Pirkis 2019	SR	General population	Media campaigns (Education/ Awareness)	RCT NRSI	20	Suicide death Suicide rates	Media campaigns reduced the number of suicides.	NR	Media campaigns may be more effective in improving beliefs and knowledge than influencing behaviors.
Reifels 2019	SR	General population	Means restriction to pesticides	RCT NRSI	5	Suicide deaths Attempted suicide	Safe storage was not effective. Bans reduced suicides and suicide attempts.	NR	Effective interventions may be specific to cultural context.
Kõlves 2020	SR	General population	Alcohol policies	NRSI	19	Suicide rates	Alcohol restrictions reduce suicide, mostly among males.	ROBINS-E	Most of the included studies are in Western countries, which limits the generalizability.
Okolie 2020a	SR	General population	Means restriction on roads	RCT NRSI	0	Suicide rates Suicide deaths Attempted suicide	No eligible studies were found in this review.	NA	NA
Okolie 2020b	MA	General population	Means restriction (jumping)	RCT NRSI	14	Suicide rates Suicide deaths Attempted suicide	Means restriction reduces the number of suicides by jumping.	RoB ROBINS-I	Quality of the evidence is low.
Mann 2021	SR	General population	Education Screening Means restriction	RCT NRSI	97	Suicide deaths Attempted suicide Suicide ideation	Education of health care providers and means restriction reduced suicide behavior and deaths	NR	The benefit of educational programs might fade once the program stops.

NA = Not applicable; NR = Not reported; SR = Systematic Review, MA = Systematic Review with Meta-Analysis; RCT = Randomized controlled trial; NRSI = Non-randomized studies on interventions; CEBM = Oxford center for Evidence-Based Medicine Levels of Evidence; EPHPP = Effective Public Health Practice Project; RoBANS = Risk of Bias Assessment tool for Non-randomized Studies; GRADE = Grading of Recommendations Assessment, Development and Evaluation; NOS = Newcastle-Ottawa Scale; GRACE = Good ReseArch for Comparative Effectiveness; RoB = Cochrane risk-of-bias tool for randomized trials; ROBINS-*I* = Risk Of Bias In Non-randomised Studies of Interventions; ROBINS-*E* = Risk of Bias In Non-randomized Studies of Interventions-of Exposures; USPSTF = U.S. Preventive Services Task Force; CASP = Critical Appaisal Skills Programme; OECD = organisation for Economic Co-operation and Development.

[1] Zalsman 2016 investigated both multicomponent programs and single interventions.

[2] Hayden et al., 2006.

[3] Briss et al., 2000; Zaza et al., 2000.

evaluate the effect of the interventions on the outcomes were heterogeneous: suicide rates ($k = 19$), suicide death ($k = 19$), attempted suicide ($k = 17$), suicide ideation ($k = 11$), and suicidal behaviors ($k = 4$).

Across the SRs, there were a total of 702 primary studies (mean = 27.9 articles/SR; range: 7–164), and several articles were included in more than one SR. All 32 retained SRs reviewed studies with non-randomized studies on intervention (NRSI) design and 21 SRs also included randomized controlled trials (RCTs). NRSI encompasses intervention studies without randomization, which include controlled before-and-after, case-control, cohort, and interrupted-time-series designs (Barnaby et al., 2021). Aside from RCTs and NRSIs, some SRs have also included systematic reviews ($k = 1$) and meta-analyses ($k = 3$) as a

unit of analysis. Because most RCTs used to involve clinical populations - an exclusion criterion -, only data from non-clinical populations were considered in the present overview.

We observed an overlap of studies reviewed across retained SRs, which is presented in **Supplementary Material S3**. From 702 primary studies, a total of 114 articles (16.2%) presented some degree of overlap: 83 of them were included in two SRs, 20 in three SRs, six in four SRs, three in five SRs, one (Etzersdorfer and Sonneck, 1998) in seven SRs, and one (Knox et al., 2003) in eight out of 32 retained SRs in the present study. The majority ($k = 25$) of the selected SRs in the present overview were recent articles not included in previous reviews.

3.3. Risk of bias in studies and reporting biases

We used AMSTAR and ROBIS as tools to assess the methodological quality and risk of bias of selected studies, respectively. Although most SRs reported the methodological quality of articles through different tools, only SRs published after 2013, except two studies (Hahn et al., 2005; Bagley et al., 2010), have reported the use of standardized instruments to assess the risk of bias.

Overall, the AMSTAR-rated methodological quality of the included SRs (Table 2) was heterogeneous, mostly of critically low ($k = 15$) or moderate ($k = 12$) quality. There were two additional high-quality studies (Harrod et al., 2014; Okolie et al., 2020b) and two low-quality studies (Witt et al., 2017; Kõlves et al., 2020). All 32 studies had concerns about reporting the funding sources for the included studies. Overall, moderate-quality studies had a large variation on the concerns, the common ground for all of them is the missing list of excluded studies. The low-quality studies had overall the same concern as the moderate-quality ones, besides that Witt's study had issues on the statistical combination of results, and appraisal of the risk of bias on the result of the meta-analysis, and Kõlves' study in the search strategy, and in data extraction. In general, the critically low-quality studies also had problems with using a comprehensive search strategy, performing data extraction in duplicate, assessing the risk of bias in individual studies, and discussing the likely impact of risk of bias on the results. Detailed AMSTAR ratings can be found in **Supplementary material S4**.

According to ROBIS, 17 of the included studies presented a high risk of bias, other 13 presented a low risk of bias, and one presented unclear risk of bias. Unsurprisingly, the 15 SRs with critically low quality on AMSTAR were rated as high risk of bias on ROBIS. The highly biased studies presented issues in the following ROBIS domains: (a) data collection and study appraisal ($k = 19$) possibly related to the lack of a standardized technique for assessing the risk of bias in individual studies, (b) synthesis and findings ($k = 16$), (c) identification and selection of studies ($k = 13$), and (d) study eligibility criteria ($k = 7$).

Summarizing, the methodological quality and risk of bias of studies investigating primary prevention of suicide are of great concern, because these shortcomings weaken the certainty of existing evidence.

3.4. Results of individual studies and synthesis

From the 32 SRs analyzed, 11 SRs (Bagley et al., 2010; Takada and Shima, 2010; Clifford et al., 2013; Harrod et al., 2014; Milner et al., 2015; Nelson et al., 2017; Witt et al., 2017; Witt et al., 2019; Leske et al., 2020; Ishimo et al., 2021; Rostami et al., 2021) found that multicomponent program can reduce the suicide/ suicide rates, mostly in specific populations/settings such as veterans, military personnel, students, and healthcare service employees. Multicomponent programs were composed of different interventions such as educational (e.g., raising knowledge on suicide prevention), awareness, gatekeeper training, mental health promotion (e.g., mindfulness, well-being, and prevention of risk factors), and means restriction. Although this type of prevention presented a small effect on the main outcomes, in general, we could not assess thoroughly these data because several articles presented different outcomes, or even did not provide sufficient data to calculate effect size. Individual strategies of prevention such as means restriction and media reports have yielded debatable results. Less than half of articles were of acceptable quality (moderate or high) or free of significant bias.

3.5. Multicomponent programs

Generally, multicomponent programs were delivered for specific populations. Seven SRs (Bagley et al., 2010; Takada and Shima, 2010; Milner et al., 2015; Nelson et al., 2017; Witt et al., 2017; Dabkowski and Porter, 2021; Rostami et al., 2021) investigated the efficacy of multicomponent programs among workers. Three of them had low risk of bias and two found pieces of evidence among emergency personnel, and protective services (police and military population). Witt et al. (2017) found, in five reviewed studies, an approximate halving of the suicide rate at post-intervention (incidence rate ratio = 0.45, 95%CI 0.31–0.65, $I^2 = 14.8\%$, $p < 0.001$) targeting emergency and protective services employees. Community-based interventions investigated by Rostami et al. (2021) reduced suicides in four cohort studies among military personnel. One of those cohort studies (Knox et al., 2003) that included 5260,292 US Air Force personnel, found a decrease of 33% on the suicide risk across the years (relative risk = 0.67, 95%CI 0.57 - 0.80, $P = 0.0007$).

Two SRs (Clifford et al., 2013; Leske et al., 2020) of moderate quality and low risk of bias found promising results among indigenous people. Suicide attempts among indigenous people decreased in five uncontrolled before-after studies reviewed by Leske et al. (2020). For example, after the implementation of strategies including psychoeducational and public health interventions, the rate ratio of suicidal behavior has decreased in two studies (Fox et al., 1983; Centers for Disease Control and Prevention (CDC) 1998), respectively from 11.7 to 3.7 per 1000 (rate ratio = 0.29, 95%CI 0.17 - 0.52) and from 59.8 to 8.9 per 1000 (rate ratio = 0.15, 95%CI 0.08 - 0.30).

Finally, two SRs (Harrod et al., 2014; Witt et al., 2019) with favorable methodological quality and low risk of bias investigated the efficacy of multicomponent programs among post-secondary students. Harrod's study found that some strategies reduced the incidence of suicide among students, but the evidence was insufficient to claim efficacy. Witt et al. (2019) found, in a single historically controlled trial among medical students (Thompson et al., 2010), a small reduction in the proportion of participants reporting suicidal ideation after the implementation of a program focused on psychoeducation strategies (pooled OR = 0.07, 95% CI 0.01 - 0.59).

3.6. Single interventions

3.6.1. Means restriction

When specific interventions were assessed, 11 SRs (Mann et al., 2005; Cox et al., 2013; Harrod et al., 2014; Havârneanu et al., 2015; Zalsman et al., 2016; Barker et al., 2017; Gunnell et al., 2017; Reifels et al., 2019; Okolie et al., 2020b; Ishimo et al., 2021; Mann et al., 2021) found evidence on means restriction for suicide prevention. For example, after delivering an intervention in one university, involving means restriction and mandatory assessment of suicidal behaviors, there was a significant reduction of the incidence of suicide death in comparison to 11 control universities (2.00 *vs.* 8.68 per 100,000; $p < 0.05$) (Joffe, 2008). Likewise, Zalsman et al. (2016) have shown that school-based awareness programs have reduced suicide attempts (OR = 0.45, 95%CI 0.24 – 0.85; $p = 0.014$) and suicidal ideation (OR = 0.5, 95%CI 0.27 – 0.92; $p = 0.025$). Furthermore, restriction of access to lethal means in the prevention of suicide has demonstrated evidence of suicide decrease, notably with regards to changes in analgesics packaging (overall decrease of 43%), the erection of barriers to prevent deaths by jumping in hotspots (overall decrease of 86%), and bans of pesticides, especially those of highly hazardous (decrease ranging from 8% to 50% on overall suicide rates, depending on the proportion of pesticide-suicides in the region). Although the magnitude of these

Table 2
Methodological quality and risk of bias of included studies.

Review	AMSTAR[1]	ROBIS[2]				
	Study Quality	1. Study eligibility criteria	2. Identification and selection of studies	3. Data collection and study appraisal	4. Synthesis and findings	Risk of bias in the review
Multicomponent program						
Bagley 2010	Moderate	⊖	⊖	⊖	⊖	⊖
Takada 2010	Critically Low	⊖	⊖	⊖	⊖	⊖
Clifford 2013	Moderate	⊕	⊕	⊕	⊕	⊕
Harrod 2014	High	⊕	⊕	⊕	⊕	⊕
Milner 2014	Critically Low	⊕	□	⊖	⊖	⊖
Zalsmann 2016	Critically Low	⊖	⊕	⊖	⊕	⊖
Witt 2017	Low	⊕	⊕	⊕	⊕	⊕
Nelson 2017	Moderate	⊕	⊕	⊕	⊕	⊕
Witt 2019	Moderate	⊖	⊕	⊕	⊕	⊕
Ishimo 2020	Moderate	⊕	⊕	⊕	⊕	⊕
Leske 2020	Moderate	⊕	⊕	⊕	⊕	⊕
Dabkowski 2021	Moderate	⊕	⊖	⊖	⊖	⊖
Rostami 2021	Moderate	⊕	⊕	□	⊕	⊕
Single intervention						
Mann 2005	Critically Low	⊕	⊕	⊖	⊖	⊖
Hahn 2005	Moderate	⊕	⊕	⊕	⊕	⊕
Isaac 2009	Critically Low	⊖	⊖	⊖	⊖	⊖
Bohanna 2012	Critically Low	⊕	□	⊖	⊖	⊖
Sisask 2012	Critically Low	⊖	⊖	⊖	⊖	⊖
Cox 2013	Critically	⊕	⊖	⊖	⊖	⊖

(continued on next page)

Table 2 (*continued*)

	Low					
Havârneanu 2015	Critically Low	⊖	⊖	⊖	⊖	⊖
Nasir 2016	Critically Low	□	⊖	⊖	⊖	⊖
Barker 2017	Critically Low	⊕	⊖	⊖	⊖	⊖
Gunnell 2017	Moderate	⊕	⊕	⊕	⊕	⊕
Torok 2017	Critically Low	⊕	⊕	⊖	⊖	⊖
Reifels 2018	Critically Low	⊕	⊖	⊖	⊖	⊖
Violano 2018	Moderate	⊕	⊕	⊕	⊕	⊕
Pirkis 2019	Critically Low	⊕	⊖	⊖	⊖	⊖
Kõlves 2020	Low	⊕	⊕	⊖	⊕	□
Melia 2020	Moderate	⊕	⊕	⊕	⊕	⊕
Okolie 2020b	High	⊕	⊕	⊕	⊕	⊕
Mann 2021	Critically Low	□	⊖	⊖	⊖	⊖

⊕= low risk; ⊖= high risk; □ = unclear risk

[1]Shea et al., 2017
[2]Whiting et al., 2016

figures is modest, the evidence is jointly significant.

Regarding firearms restriction, an earlier SR conducted with data from the Task Force on Community Preventive Services (Hahn et al., 2005) concluded that existing local firearms laws were insufficient for effective prevention of violence and suicide-related outcomes, i.e., it is still unclear the effect of laws (if any) on death rates. Moreover, the availability and storage of firearms in households could have an amplifying effect on mortality and suicide risk (Zalsman et al., 2016; Violano et al., 2018). For example, Zalsman et al. (2016) found that the firearm availability in households increased the likelihood of suicide (pooled OR = 3.2; 95%CI 2.4 - 4.4) and Dahlberg et al. (2004) reported a higher odd of homicide (OR = 1.9; 95%CI 1.1 - 3.4) and suicide (OR = 10.4 for males; 95%CI 5.8 - 18.9, and OR = 2.3 for women; 95%CI 1.0 - 5.0) among decedents identified retrospectively from a nationwide mortality survey of US. Criticisms were directed, however, to the flawed methodology of firearm surveys.

3.7. Media reports

Quality of media coverage about suicide impacts on suicide behaviors, both to prevent or increase it (Mann et al., 2005; Bohanna and Wang, 2012; Sisask and Värnik, 2012; Cox et al., 2013; Zalsman et al., 2016; Barker et al., 2017; Torok et al., 2017; Pirkis et al., 2019; Ishimo et al., 2021). The included studies provide evidence that poor quality of media reporting is related with increasing suicide and that better quality of media coverage could help suicide prevention, but it is highly associated to the adherence to media guidelines by the journalists, the media, and communication companies ((Bohanna and Wang, 2012; Ishimo et al., 2021).

3.8. Gatekeeper training and education/awareness

As a part of multicomponent programs, the efficacy evidence of gatekeeper training and education/awareness strategies in reducing suicide outcomes (suicide death, attempts and other behaviors) is

limited. However, gatekeeper training interventions are potentially replicable across studies and has shown to be effective in increasing protective behaviors and improve suicide-related knowledge in short-term follow-up (Isaac et al., 2009; Clifford et al., 2013; Harrod et al., 2014).

4. Discussion

For the first time, the evidence of primary prevention for suicidal behaviors in non-clinical adult populations was clustered and assessed based on high-quality guidelines. Evidence on single and multicomponent strategies were evaluated. Generally, most of the studies on suicide prevention focused on general population and evaluated single-intervention strategies such as restriction of access to means, media coverage, and gatekeeper training. Means restriction was the only intervention that showed some evidence of individual efficacy, in reducing deaths by suicide, either in the general population (Zalsman et al., 2016; Okolie et al., 2020b; Ishimo et al., 2021) or in post-secondary educational settings (Harrod et al., 2014). Also, some studies pointed out the effect of gun storage (loaded and unlocked) on suicide rates (Violano et al., 2018), and restricting access to pesticides, mostly by banning highly hazardous pesticides often used as a suicide method (Gunnell et al., 2017). The role of media coverage is an intervention that deserve attention, once its poor quality has the potential to increase suicide risk and, in the other hand, when the journalists follow the media guidelines for better quality (and protective) reports, it has the power to help suicide prevention (Torok et al., 2017; Ishimo et al., 2021). Although our results have partially confirmed previous recommendations (Mann et al., 2005; Zalsman et al., 2016), the strength of the available evidence does not support the widespread application of the majority of primary prevention strategies in the community.

Multicomponent strategies also showed benefits, by combining two or more interventions in a target population, but the separate effect of each individual intervention was difficult to estimate. Gatekeeper training and education/awareness strategies - often incorporated in multicomponent programs - presented weak evidence for reducing suicide death or behaviors. Nevertheless, those interventions presented an encouraging effect in building skills and increasing suicide-related knowledge and protective behavior (Isaac et al., 2009; Clifford et al., 2013; Harrod et al., 2014; Nasir et al., 2016 Torok et al., 2017; Pirkis et al., 2019; Witt et al., 2019). Most of the multicomponent strategies with evidence of efficacy were delivered to specific populations and settings, especially when tailored accordingly to the specificities of the population/setting where it was applied. (Clifford et al., 2013; Witt et al., 2017; Nelson et al., 2017; Leske et al., 2020; Rostami et al., 2021). Considering that distinct cultures can have different attitudes regarding suicide (Baggio et al., 2019), programs targeting characteristics of specific populations seem to be more likely to reach positive results.

Some researchers have adopted different conceptualizations of primary prevention. Divergent concepts of prevention of suicide might be a concern when comparing the studies' results. Witt et al. (2017) understand as primary prevention only the activities targeting the occurrence of suicides through prevention of risk factors (e.g., actions to minimize sources of job stress). On the other hand, Harrod et al. (2014) employed a broader concept of primary prevention, encompassing all interventions implemented before the occurrence of suicidal behavior or the expression of suicide ideation (e.g., means restriction, empathetic listening, and prevention of risk factors). Therefore, conceptual heterogeneity may have contributed to diverse conclusions across studies.

An overview similar to the present study was published a decade ago (van der Feltz-Cornelis et al., 2011). However, new studies have been conducted to assess suicide prevention, the methodology of overview has improved, and updated guidelines have been proposed since then (e.g., Aromataris and Munn, 2020). Instruments for assessing methodological quality and risk of bias were designed specifically to assess SR and meta-analyses have been developed (Whiting et al., 2016; Shea et al., 2017). For example, in the van der Feltz-Cornelis et al. (2011) overview study, the level of evidence was not fully evaluated according to the recommended standardized assessment tools and methodology. Therefore, it is time to reassess the cumulative evidence on the research topic of suicide prevention in its variability (Nelson, 2014).

4.1. Multicomponent strategies

Multicomponent packages, when tailored to populations in specific contexts, have encouraging results, probably because these programs consider the characteristics and the environment of the target population. Some multicomponent programs, mostly those delivered to specific ethnic and working groups (Clifford et al., 2013; Harrod et al., 2014; Nelson et al., 2017; Witt et al., 2017; Witt et al., 2019; Leske et al., 2020), presented more remarkable results than those targeting the general population (Mann et al., 2005; Zalsman et al., 2016). Regardless of culture or population segment, the multicomponent strategy was the commonplace among favorable programs of suicide prevention.

Across multicomponent studies on prevention of suicide, heterogeneous strategies included different interventions, such as means restriction, awareness and educational programs, mental health promotion (e.g., well-being and mindfulness activities, empathetic listening), gatekeeper training, and prevention of risk factors of suicide (e.g., hopelessness, lack of social support, and psychiatric disorders). Although there was no single component responsible for positive findings, means restriction and educational strategies stood out as a common ingredient in most multicomponent programs.

Indigenous people have some peculiarities regarding mental health (Hawton and van Heeringen, 2009), which could justify the need for tailoring culturally-designed programs and strategies (Clifford et al., 2013; Nasir et al., 2016; Leske et al., 2020). Marginalization, disintegration of traditional social support networks and cultural values, socioeconomic deprivation, and alcohol misuse are contributing factors for higher suicide rates among indigenous people (Hawton and van Heeringen, 2009). Overall, the prevention programs for indigenous people included culturally-adapted strategies such as suicide-risk screening, alcohol restrictions, gatekeeper training, awareness, traditional value promotion, and educational strategies. A recent SR (Leske et al., 2020) found a decrease in suicides and suicide attempts in multilevel and multicomponent programs, which supports previous findings (Clifford et al., 2013). However, there were some concerns about the methodological quality of intervention studies with indigenous peoples. The main issues were the selection bias, the allocation bias, and the control of confounding factors. Suicide among indigenous people is a matter of great dispute because particular cultural aspects and the community-centered behaviors preclude generalizing findings to Western populations. Learned lessons from programs applied to indigenous suggest that considering characteristics of the target population may enhance the effectiveness of primary prevention, which should be replicated in different populations with methodologically correct interventions (Clifford et al., 2013; Nasir et al., 2016; Leske et al., 2020).

In educational settings, two good-quality SRs (Harrod et al., 2014; Witt et al., 2019) investigated the application of school-based suicide prevention programs. Previous studies (Evans and Hurrell, 2016) have claimed that the school environment plays a role in risk behaviors such as suicidality, which are mostly observed during the school period and decrease during vacation weeks (Poland and Ferguson, 2021). Despite suicide being one of the leading causes of death among individuals aged 15–29 years (World Health Organization 2014), in a large meta-analysis including 634,662 college students, Mortier et al. (2018) found that the suicide rates among college students vary greatly, but are lower than the same-aged non-college peers. College-based programs of suicide commonly combine heterogeneous strategies such as means restriction, assessment for suicide behavior, gatekeeper training, and mental health promotion. Most of the studies reviewed by Harrod et al. (2014) were composed of a combination of both primary and secondary

interventions. Even though this multilevel combination precludes clear appreciation of individual efficacy of primary and secondary strategies on suicide rates and behaviors, most student deaths could be avoidable if timely prevention and treatment were available in educational settings.

Emergency service workers and military personnel are known as a vulnerable group for suicide (Hawton and van Heeringen, 2009). However, the amount of evidence of primary prevention to these workers is still limited. According to the included SRs (Bagley et al., 2010; Milner et al., 2015; Witt et al., 2017; Rostami et al., 2021), the implementation of the programs was associated with a reduction of the suicide rate among employees in emergency and police/military personnel. However, these programs did not focus solely on primary prevention, raising concern about the contribution of complementary secondary prevention on the global decrease of death by suicide. Furthermore, there are concerns about the methodological quality and risk of bias of all four studies, with missing information on details of study execution, selection of studies, and assessment of the impact of the individual risk of bias on the synthesis, and publication bias. Accordingly, the AMSTAR moderate-quality studies by Nelson et al. (2017) and Rostami et al. (2021) concluded that, despite the positive results, there was insufficient evidence to support the use of the population-level programs among veterans and military populations, pointing to the need of more rigorous studies.

Regarding the application of primary prevention for suicide, some points should be noted. The interaction between primary and secondary levels of prevention is still poorly understood. Although most studies suggest the application of multicomponent primary prevention in combination with secondary interventions as a pathway to suicide prevention, only recently the combined effect of multilevel strategies has been investigated (van der Feltz-Cornelis et al., 2011; Hofstra et al., 2020). Some researchers (e.g., van der Feltz-Cornelis et al., 2011; Hom et al., 2015; Wilcox and Wyman, 2015) regard this multilevel strategy as a means to intensify the efficacy of suicide prevention in general. For instance, the primary level strategy of awareness could be potentialized by adding a secondary strategy of promotion of access to mental health care service. The Integrated Suicide Prevention Program (SPIRIT) is an interesting example from India (Pathare et al., 2020): it is an intervention package encompassing: (a) school-based interventions to reduce suicidal ideation, (b) control of community pesticides storage facilities to reduce access to these substances, and (c) training for community health workers in recognition, management, and appropriate referral of people with suicidal risk to a mental health specialist.

Fragile evidence of positive programs does not justify a widespread implementation of prevention packages in particular settings. Furthermore, the unclear effect of each individual component of multicomponent strategies hinders the identification of necessary actions to promote effective primary prevention. Finally, the frequent combination of both primary and secondary levels of suicide prevention suggests the need for additional research to recognize the "best buy" of suicidology.

4.2. *Single interventions*

4.2.1. *Means restriction*

Restricting access to lethal means was the only intervention that presented some evidence of efficacy on suicide outcomes when evaluated individually (Harrod et al., 2014; Mann et al., 2005; Zalsman et al., 2016). The access to specific lethal methods enables the conversion of suicidal thoughts into action (Hawton and van Heeringen, 2009) and has been related to changes in suicide rates among ecological studies (Fazel and Runeson, 2020). Detoxification of domestic gas, lower availability of alcohol spirits, pesticide restrictions, erection of barriers at jumping spots, and smaller packs of medications are some of the different strategies of means restriction that have been related to a reduction of death by suicide (Fazel and Runeson, 2020). In the present overview, only four SRs on means restriction (Harrod et al., 2014; Gunnell et al., 2017; Okolie et al., 2020b; Ishimo et al., 2021) presented favorable methodological quality and low risk of bias. These issues limit the generalizability of its recommendation.

Authors have argued that means restriction could be effective in reducing suicide when the method is accessible, available, popular, and highly lethal (Hawton, 2007; Sarchiapone et al., 2011;(Butterworth and Daruwala, 2020). Considering that suicide by the ingestion of pesticides, jumping, and by firearms are common and highly lethal methods for suicide, this statement supports the findings of the present study. Five SRs that approached means restriction (Mann et al., 2005; Cox et al., 2013; Havârneanu et al., 2015; Zalsman et al., 2016; Barker et al., 2017; Reifels et al., 2019) did not conduct an appropriate assessment of the risk of bias. The lack of quality assessment on the SRs jeopardizes the evaluation of efficacy on the studied intervention, once that poor-quality studies tend to overemphasize the estimate of intervention's effect and might lead to incorrect inferences (Khan et al., 1996). In a high-quality study, Harrod et al. (2014) found some efficacy of means restriction on post-secondary educational settings. Nevertheless, the simultaneous implementation of professional assessment hindered the appraisal of the independent effect of means restriction (Harrod et al., 2014).

Three SRs with low risk of bias and good methodological quality found evidence of effectiveness for the erection of physical barriers at jumping hotspots (Okolie et al., 2020b; Ishimo et al., 2021), and for bans to highly hazardous pesticides (Gunnell et al., 2017). The evidence of effectiveness of pesticides restrictions may vary among regions, because of the difference in the proportion of pesticide-specific suicide on the overall suicide death rate (Gunnell et al., 2017; Reifels et al., 2019). Bans of highly hazardous pesticides has shown to be effective in reducing overall deaths by suicide, especially in regions where the suicide by pesticide ingestion represents at least 15% of the overall deaths by suicide (Gunnell et al., 2017).

Firearms are a well-known suicide method for their high lethality. Overall, firearms restrictions present mixed results across studies, differing according to country and culture (Fazel and Runeson, 2020). Even though (Hahn et al., 2005) found no evidence on firearms laws for preventing suicide, a more recent study (Violano et al., 2018) showed an increase in suicide mortality when firearm guns are stored loaded, and an even greater increase if they are stored unlocked. These findings confirm evidence gathered from recent literature. The authors of this study recommend the safe storage of firearms as means of prevention.

Firearms are also an accessible, available, popular, and highly lethal method of suicide, especially where the ownership of and access to firearms are regulated by local law and culture. In the United States, more than half of suicide deaths between 2001 and 2019 were caused by firearms (Centers for Disease Control and Prevention (CDC) 2021). A high proportion of firearm owners are unaware of (or do not believe in) the relationship of suicide risk with firearms availability and unsafe storage (Anestis et al., 2018; Butterworth and Daruwala, 2020). Similar means restriction strategies need more evidence of effectiveness and rigorous evaluation in the general population. Educational awareness should be encouraged to replace distorted beliefs about the unsafe storage of firearms.

4.3. *Media reports*

Quality of media coverage about suicide can either help or hinder suicide prevention (Mann et al., 2005; Bohanna and Wang, 2012; Sisask and Värnik, 2012; Cox et al., 2013; Zalsman et al., 2016; Barker et al., 2017; Torok et al., 2017; Pirkis et al., 2019; Ishimo et al., 2021). When the reports are of a good quality, based on media guidelines, it has a potential effect to help suicide prevention and reduce deaths by suicide. On the other hand, when the journalists and communication mechanisms do not follow the media guidelines and provide poor quality reports, it is directly related to contagious effects (e.g., contagious Werther effect, copycat effect, imitation or contagion), increasing the numbers of suicide deaths. The adherence to media guidelines and better-quality reporting is related to reduced suicides, especially when media

campaigns are part of a multicomponent program (Ishimo et al., 2021). Bohanna and Wang (2012) found that journalists are often resistant to adhere to the guidelines or even do not know about them. For the media to have a real effect on suicide prevention and contribute to the global purpose in reducing deaths by suicide, it is crucial to elevate the quality of media reports, by improving media guidelines dissemination strategies, as well as the media industry endorsement of those guidelines, and ongoing training/monitoring of the journalists and other communication professionals.

While suicide mortality increased in the US between 1999 and 2018, a recent study (Martínez-Alés et al., 2021) found substantial variation in age and cohort effects by method, sex, and race, with two peaks of risk regarding male firearm suicide. The first peak was observed in younger cohorts of non-White individuals and a second peak in older ages. These findings suggest including age-specific interventions in clinical firearm safety. Also, drivers of minority populations' adverse early-life experiences and racial differences in access to mental healthcare should be considered in future interventions.

4.4. *Quality of evidence*

No study with a low risk of bias and moderate or high quality could show evidence on the efficacy of other interventions individually. Around half (Mann et al., 2005; Isaac et al., 2009; Takada and Shima, 2010; Bohanna and Wang, 2012; Sisask and Värnik, 2012; Cox et al., 2013; Milner et al., 2015; Havârneanu et al., 2015; Nasir et al., 2016; Zalsman et al., 2016; Barker et al., 2017; Torok et al., 2017; Reifels et al., 2019; Pirkis et al., 2019; Mann et al., 2021) of included SRs were conducted with critically-low quality of methodology and high risk of bias. The low quality of methodology and the high risk of bias of the studies jeopardize directly the robustness of evidence on the results and findings (Khan et al., 1996). For instance, the adoption of Oxford's Center for Evidence-based Medicine (CEBM) criteria in three articles (Mann et al., 2005; Isaac et al., 2009; Zalsman et al., 2016) has not detailed key methodological shortcomings of retained articles. Non-comparable measures of quality prevent a reliable assessment of the quality of evidence.

Most of the studies on primary prevention are NRSI, which penalized the quality of evidence. Usually, these study designs do not have a comparison or control population, reducing the overall validity of investigations on suicide prevention. RCTs are considered the gold standard when evaluating evidence on interventions, but there are authors (Nelson, 2014) that endorse using observational studies, once they might provide "real-world effectiveness" on outcomes that are less commonly captured in RCTs. Primary prevention studies on suicide outcomes might be easier to measure by observational designs, given the complexity of the phenomenon and the fact that primary prevention interventions target non-clinical populations. In addition, the time of post-intervention follow-up assessment was greatly variable across studies, ranging from immediately after intervention to years or even decades, hampering the comparability of estimates in rates of suicide (Clifford et al., 2013).

Meaningful comparison of heterogeneous outcomes is taxing. This highlights the need for consensus and homogeneous measures of methods and outcomes of suicide prevention (da Costa et al., 2020). Primary prevention strategies usually target the prevention of the onset of suicidal thoughts and behaviors, aiming to mitigate the effects of risk factors (Horowitz et al., 2020), thus it is hardly possible to measure its efficacy using suicide death as the main outcome. Combined with culturally-specific strategies, outcomes indirectly related to suicide, such as hopelessness feelings, suicide-related knowledge, problem-solving ability, and protective behaviors, might be promising in suicide prevention (Clifford et al., 2013). Thus, considering that primary prevention of suicide tackles modifiable risk factors (Fazel and Runeson, 2020), future research should investigate how protective/risk factors can predict forthcoming suicide-related outcomes.

4.5. *Strength and limitations*

The present study has focused on the primary prevention of suicide in non-clinical population and has rated the quality of the available evidence through standardized tools. The evaluation of the strength of evidence with reporting guidelines improved the evidence-based to existing knowledge on preventive programs of suicide at the population level.

Even though we have followed a reliable methodology in conducting the present overview, some limitations should be noted. An overview is subject to the limitations of any SRs, relevant studies could be omitted and bias arises during the selection, appraisal or data extraction processes. First, our study could have a risk of publication bias because we did not conduct an exhaustive search of the gray literature nor contacted experts on suicidology. The coverage of existing SRs or research syntheses is a dynamic process, with continuous publication of new articles. Second, since studies with significant findings are more likely to be published, potential publication biases could not be ruled out. We believe that our search on multiple databases plus hand search has minimized the risk of missing important studies.

Bias can distort the results when systematic flaws or limitations in the design, execution, analysis, or methodological quality of a review occur. In an overview, errors arise during data extraction and appraisal. Frequently, the accuracy of an overview can be affected when eligible SRs do not report full details of an intervention or outcome. The synthesis of incomplete data might be hard to integrate in a single overview document. Accordingly, the higher the heterogeneity of the quality of SRs, the lower the strength of overall evidence.

In a review of SRs, the overlap of the same studies across different SRs is a critical issue (Pieper et al., 2012). We could not assess the independent contribution of each overlapped SRs, but we performed a careful assessment of the proportion of overlapped articles (around 16 %) and concluded that the effect of overlap is negligible.

In our narrative synthesis, we evaluated the methodological quality and risk of bias of the SRs as a means to assess the strength of the evidence. Current guidelines such as PRISMA (Page et al., 2021) and GRADE (Brozek et al., 2009) recommend a quantitative evaluation for the certainty of the evidence. We were not able to perform the certainty analysis because data of eligible studies was highly heterogeneous and, sometimes, quantitative information was lacking. Notably, no eligible studies in the present review have assessed the strength of certainty. Future reviews should evaluate domains of certainty such as publication bias, study limitations, imprecision, indirectness, and consistency.

5. Conclusions

We reviewed SRs of primary prevention programs and interventions on suicide outcomes. The reviewed studies suggest that multicomponent and multilevel programs tailored for specific populations have promising results. The only single intervention that has shown some evidence of efficacy on the general population is the means restriction (e.g., erection of physical barriers at hotspots, or restriction to firearms and pesticides), mostly when it is applied on for a common method of suicide, which vary across regions. There is also suggestion that media have an important role in suicide prevention, by improving the quality of suicide-related reports. From the standpoint of public health, there is no unmistakable clue that extensive implementation of primary prevention could decrease suicide-related outcomes in adult populations. In fact, after reviewing existing literature, the US Preventive Services Task Force does not endorse screening suicidal ideation as a potential preventive measure in primary care (U.S. Preventive Services Task Force 2004; LeFevre, 2014).

Considering the methodological quality and the consistency of evidence generated by studies on the primary prevention of suicide, there is still a long road ahead of us. Evidence-based programs or policies of suicide prevention hold the opportunity to overcome prior limitations.

Future investigations of suicide prevention should focus on the relevance of evidence from available literature, from both intervention and review articles. The joint effect of primary and secondary prevention focusing on high-risk vulnerable groups and mental health patients remains under-explored. Finally, it is recommended to test the assumed higher efficacy of multicomponent programs of suicide prevention to different population samples, as well as stringent policies of means restriction, and adherence to the media guidelines by press vehicles and journalists.

Authors' contribution

YPW and CSA conceived the study. CSA and APRA performed the literature search and article assessment. CSA, APRA, ACOS, and YPW wrote the draft version of the article. ACOS and YPW provided methodological assistance to this review. All authors have critically reviewed the manuscript and agreed to its dissemination in its current stage.

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Declaration of competing interest

Authors declare no conflict of interest.

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2.1.1 Artigo I: Material Suplementar

Material Suplementar 1: Estratégia de busca

Search Strategies

DATABASE #1

PubMed

Time period covered: from inception to 31/07/2021

Study type: Systematic review

Search strategy:

suicid* AND ("primary prevention" OR "preventive health services" OR "public health practice"OR "prevention and control" OR "universal prevention" OR "universal intervention")

Articles retrieved: 265

DATABASE #2

Embase

Time period covered: from inception to 31/07/2021

Study type: Systematic reviews

Search strategy:

suicid* AND ('primary prevention'/exp OR 'control strategy'/exp OR 'preventive health service'/exp OR 'social psychiatry'/exp OR 'prevention study'/exp OR 'prevention and control'/exp OR 'universal prevention' OR 'universal intervention')

Articles retrieved: 388

DATABASE #3

Scopus

Time period covered:from inception to 2021

Document type: Article, Review and Book Chapter

Search strategy:

(TITLE-ABS-KEY (suicid*) AND TITLE-ABS-KEY ("primary prevention" OR "preventive health services" OR "public health practice" OR "prevention and control" OR "universal prevention" OR "universal intervention"))

Articles retrieved: 1,497

DATABASE #4

APA PsycInfo

Time period covered: from inception to 31/07/2021

Search strategy:

> MeSH: suicid* AND (MeSH: "primary prevention" OR MeSH: "preventive health services" OR MeSH: "public health practice" OR MeSH: "prevention and control" OR “universal prevention” OR “universal intervention”)

Articles retrieved: 125

DATABASE #5

Cochrane Library

Time period covered: from inception to 31/07/2021

Document type: Cochrane Reviews

Search strategy:

> Suicide AND ("primary prevention" OR "preventive health services" OR "public health practice" OR "universal prevention" OR "universal intervention" OR "prevention and control")

Articles retrieved: 40

Material Suplementar 2: Tabela S2. Características dos estudos excluídos

Table S2_ Characteristics Of Excluded Studies [ordered by reason for exclusion]

Author/Year	Title	Reason for exclusion
Breet 2021	Systematic review and narrative synthesis of suicide prevention in high-schools and universities: a research agenda for evidence-based practice	Mixed data of adult and non-adult sample
Hoffber 2020	The Effectiveness of Crisis Line Services: A Systematic Review	Mixed data of adult and non-adult sample
Musci 2018	The study of effect moderation in youth suicide-prevention studies.	Mixed data of adult and non-adult sample
Pistone 2019	The effects of educational interventions on suicide: A systematic review and meta-analysis	Mixed data of adult and non-adult sample
Robinson 2011	Preventing suicide in young people: Systematic review	Mixed data of adult and non-adult sample
Wilcox 2016	Data linkage strategies to advance youth suicide prevention: A systematic review for a National Institutes of health pathways to prevention workshop	Mixed data of adult and non-adult sample
Anglemyer 2014	The accessibility of firearms and risk for suicide and homicide victimization among household members: a systematic review and meta-analysis	Not a primary prevention study
Bernet 2020	Artificial Intelligence and Suicide Prevention: A Systematic Review of Machine Learning Investigations	Not a primary prevention study
Bouris 2010	A systematic review of parental influences on the health and well-being of lesbian, gay, and bisexual youth: time for a new public health research and practice agenda	Not a primary prevention study
Kreuze 2017	Technology-enhanced suicide prevention interventions: A systematic review	Not a primary prevention study
Meerwijk 2016	Direct versus indirect psychosocial and behavioural interventions to prevent suicide and suicide attempts: a systematic review and meta-analysis	Not a primary prevention study
Mishara 2015	Systematic review of research on railway and urban transit system suicides	Not a primary prevention study
Smith-MacDonald 2017	Spirituality and Mental Well-Being in Combat Veterans: A Systematic Review	Not a primary prevention study
Torok 2020	Suicide prevention using self-guided digital interventions: a systematic review and meta-analysis of randomised controlled trials	Not a primary prevention study
Vacampfort 2018	Physical activity and suicidal ideation: a systematic review and meta-analysis	Not a primary prevention study
Witt 2017	Effectiveness of online and mobile telephone applications ('apps') for the	Not a primary prevention study

	self-management of suicidal ideation and self-harm: a systematic review and meta-analysis	
Wolitzky-Taylor 2020	Suicide prevention on college campuses: What works and what are the existing gaps? A systematic review and meta-analysis	Not a primary prevention study
Combalbert 2006	Suicide by jumping and strategies to prevent it	Not a Systematic Review
Durkee 2011	Internet pathways in suicidality: a review of the evidence	Not a Systematic Review
Fountoulakis 2011	Suicide prevention programs through community intervention.	Not a Systematic Review
Krysinska 2008	Suicide on railway networks: Epidemiology, risk factors and prevention	Not a Systematic Review
Redvers 2015	A scoping review of Indigenous suicide prevention in circumpolar regions.	Not a Systematic Review
Robinson 2018	Suicide prevention in educational settings: a review	Not a Systematic Review
Ferguson 2020	The impact of suicide prevention education programmes for nursing students: A systematic review	Wrong outcomes
Holmes 2021	The Long-Term Efficacy of Suicide Prevention Gatekeeper Training: A Systematic Review	Wrong outcomes
Robinson 2016	Social media and suicide prevention: a systematic review	Wrong outcomes
Yonemoto 2018	Gatekeeper training for suicidal behaviors: A systematic review	Wrong outcomes
Franco-Martin 2018	A Systematic Literature Review of Technologies for Suicidal Behavior Prevention	Wrong population
Hill 2021	Saving Lives: A Systematic Review on the Efficacy of Theory-Informed Suicide Prevention Programs	Wrong population
Hofstra 2020	Effectiveness of suicide prevention interventions: A systematic review and meta-analysis	Wrong population
Katz 2013	A systematic review of school-based suicide prevention programs.	Wrong population
Sonke 2021		Wrong population
Pospos 2018	Web-Based Tools and Mobile Applications To Mitigate Burnout, Depression, and Suicidality Among Healthcare Students and Professionals: a Systematic Review	Not a systematic review of intervention studies

Material Suplementar 3: Tabela S4. Itens AMSTAR2

Table S4_AMSTAR items

Author/ Year	Reviwer	1. Did the research questions and inclusion criteria for the review include the components of PICO?	2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	3. Did the review authors explain their selection of the study designs for inclusion in the review?	4 Did the review authors use a comprehensive literature search strategy?	5. Did the review authors perform study selection in duplicate?	6 Did the review authors perform data extraction in duplicate?	7. Did the review authors provide a list of excluded studies and justify the exclusions?	8. Did the review authors describe the included studies in adequate detail?	9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review? - RCTs	9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review? - NRSI	10. Did the review authors report on the sources of funding for the studies included in the review?	11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results? - RCTs	11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results? - NRSI	12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	15. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Rating
Hahn 2005	AP.R.A.	Y	PY	Y	PY	Y	Y	N	PY	N/A	Y	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	Y	PY	Y	PY	Y	Y	N	PY	N/A	Y	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
Mann 2005	AP.R.A.	N	N	N	N	Y	Y	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	N	N	Y	PY	Y	N	N	PY	N	N	N	N/A	N/A	N/A	N	Y	N/A	Y	Critically Low
Isaac 2009	AP.R.A.	N	N	N	N	Y	Y	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	Y	N	N	N	Y	N	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
Bagley 2010	AP.R.A.	Y	N	N	PY	N	N	N	PY	PY	PY	N	N/A	N/A	N/A	Y	Y	N/A	N	Moderate
	C.S.A.	Y	N	N	PY	N	N	N	Y	Y	Y	N	N/A	N/A	N/A	Y	Y	N/A	N	Moderate
Takada 2010	AP.R.A.	N	N	N	N	N	N	N	Y	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
	C.S.A.	N	N	N	N	N	N	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
Bohanna 2012	AP.R.A.	N	N	N	N	N	N	N	Y	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	Y	N	N	PY	N	N	N	N	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
Sisask 2012	AP.R.A.	N	N	N	N	N	N	N	Y	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	Y	N	Y	PY	N	N	N	N	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
Cox 2013	AP.R.A.	Y	N	Y	N	N	N	N	PY	N/A	PY	Y	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	N	N	Y	N	N	N	N	PY	N/A	N	N	N/A	N/A	N/A	Y	N	N/A	Y	Critically Low
Clifford 2013	AP.R.A.	N	N	N	PY	Y	N	PY	Y	Y	Y	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	N	PY	N	PY	Y	N	N	Y	N/A	Y	N	N/A	N/A	N/A	Y	Y	N/A	Y	Moderate
Harrod 2014	AP.R.A.	Y	Y	Y	PY	Y	Y	Y	Y	Y	Y	N	Y	N/A	Y	Y	Y	Y	Y	High
	C.S.A.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N/A	Y	Y	Y	Y	Y	High
Milner 2015	AP.R.A.	Y	N	N	N	N	N	N	N	N	N	N	N/A	N	N	N	N	N	N	Critically Low
	C.S.A.	Y	N	N	PY	N	N	N	N	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
Havârneanu 2015	AP.R.A.	N	N	N	N	N	N	N	PY	N/A	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically low
	C.S.A.	N	N	N	PY	N	N	N	PY	N/A	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
Nasir 2016	AP.R.A.	N	N	N	N	N	N	N	Y	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	Y	N	N	N	N	N	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
Zalsman 2016	AP.R.A.	N	N	N	N	Y	N	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	N	N	Y	PY	Y	Y	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
Barker 2017	AP.R.A.	Y	N	N	N	N	N	N	N	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	Y	N	N	PY	N	N	N	N	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
Gunnell 2017	AP.R.A.	Y	PY	Y	PY	Y	Y	N	PY	N/A	PY	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	Y	Y	Y	PY	Y	Y	N	N	N/A	Y	N	N/A	N/A	N/A	Y	Y	N/A	Y	Moderate
Nelson 2017	AP.R.A.	Y	Y	N	PY	Y	Y	N	Y	PY	PY	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	Y	PY	Y	Y	Y	Y	N	Y	Y	Y	N	N/A	N/A	N/A	Y	Y	N/A	Y	Moderate
Pirkis 2017	AP.R.A.	N	N	N	PY	N	N	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low

Table S4_AMSTAR items

Author/ Year	Reviwer	1. Did the research questions and inclusion criteria for the review include the components of PICO?	2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	3. Did the review authors explain their selection of the study designs for inclusion in the review?	4. Did the review authors use a comprehensive literature search strategy?	5. Did the review authors perform study selection in duplicate?	6. Did the review authors perform data extraction in duplicate?	7. Did the review authors provide a list of excluded studies and justify the exclusions?	8. Did the review authors describe the included studies in adequate detail?	9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review? - RCTs	9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review? - NRSI	10. Did the review authors report on the sources of funding for the studies included in the review?	11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results? - RCTs	11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results? - NRSI	12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Rating
Pirkis 2017	C.S.A.	N	N	N	PY	N	N	N	PY	N	N	N/A	N/A	N/A	N	N	N	N/A	Y	Critically Low
Torok 2017	AP.R.A.	Y	N	Y	PY	Y	Y	N	Y	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
	C.S.A.	Y	N	Y	PY	Y	Y	N	Y	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
Witt 2017	AP.R.A.	Y	N	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y	N	Y	Low
	C.S.A.	Y	N	N	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	Y	Y	N	Y	Low
Mella 2018	AP.R.A.	Y	Y	Y	N	Y	Y	N	PY	Y	Y	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	Y	Y	Y	Y	Y	Y	N	PY	Y	Y	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
Violano 2018	AP.R.A.	Y	N	N	PY	Y	Y	N	Y	N/A	Y	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	Y	N	N	PY	Y	Y	N	Y	N/A	Y	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
Reifels 2019	AP.R.A.	Y	N	Y	PY	N	N	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
	C.S.A.	Y	N	Y	PY	N	N	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
Witt 2019	AP.R.A.	Y	N	N	PY	Y	Y	N	PY	Y	Y	N	Y	Y	N	Y	Y	N	Y	Moderate
	C.S.A.	Y	N	N	PY	Y	Y	N	PY	Y	Y	N	Y	Y	N	Y	Y	N	Y	Moderate
Kõlves 2020	AP.R.A.	Y	PY	N	N	Y	N	N	PY	N/A	Y	N	N/A	N/A	N/A	Y	N	N/A	Y	Low
	C.S.A.	Y	PY	Y	PY	Y	N	N	Y	N/A	Y	N	N/A	N/A	N/A	N	N	N/A	Y	Low
Leske 2020	AP.R.A.	N	PY	Y	PY	Y	Y	N	PY	Y	Y	N	N/A	N/A	N/A	Y	Y	N/A	Y	Moderate
	C.S.A.	N	PY	Y	PY	Y	Y	N	Y	Y	Y	N	N/A	N/A	N/A	Y	Y	N/A	Y	Moderate
Okolie 2020b	AP.R.A.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	High
	C.S.A.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	High
Dabkowski 2021	AP.R.A.	Y	PY	Y	PY	Y	N	N	N	Y	PY	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	Y	PY	Y	PY	Y	N	N	N	Y	PY	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
Ishimo 2021	AP.R.A.	Y	Y	N	PY	Y	Y	N	PY	N/A	PY	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	Y	Y	Y	PY	Y	N	N	PY	N/A	Y	N	N/A	N/A	N/A	Y	Y	N/A	Y	Moderate
Mann 2021	AP.R.A.	Y	N	Y	PY	N	N	N	PY	N	N	N	N/A	N/A	N/A	N	N	N/A	Y	Critically Low
	C.S.A.	Y	N	Y	N	N	N	N	Y	N	N	N	N/A	N/A	N/A	N	N	N/A	N	Critically Low
Rostami 2021	AP.R.A.	Y	PY	Y	PY	Y	Y	N	PY	PY	PY	N	N/A	N/A	N/A	Y	N	N/A	Y	Moderate
	C.S.A.	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	N/A	N/A	N/A	Y	Y	N/A	Y	Moderate

Y="Yes"; PY="Partial Yes"; N="No"; N/A=Not applicable ("Includes only NRSI", "Includes only RCTs", or "No meta-analysis conducted")

2.2 Artigo II: Suicide ideation among Brazilian college students: Relationship with academic factors, mental health, and sexual abuse

Altavini, C. S., Asciutti, A. P. R., Santana, G. L., Solis, A. C. O., Andrade, L. H., Oliveira, L. G., Andrade, A. G., Gorenstein, C., & Wang, Y.-P. (2023). Suicide ideation among Brazilian college students: Relationship with academic factors, mental health, and sexual abuse. Journal of Affective Disorders. https://doi.org/10.1016/j.jad.2023.02.112

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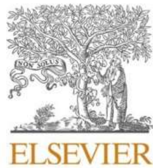
Journal of Affective Disorders 329 (2023) 324–334



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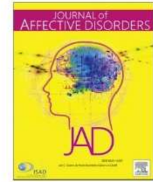

Suicide ideation among Brazilian college students: Relationship with academic factors, mental health, and sexual abuse

Camila Siebert Altavini [a,b], Antônio Paulo Rinaldi Asciutti [a], Geilson Lima Santana [a], Ana Cristina Oliveira Solis [a], Laura Helena Andrade [a], Lúcio Garcia Oliveira [c], Arthur Guerra Andrade [a,c], Clarice Gorenstein [a,d], Yuan-Pang Wang [a,*]

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ARTICLE INFO

Keywords:
Self-injurious behavior
Risk factors
Young adult
College students
Suicide
Brazil

ABSTRACT

Background: Suicide is one of the leading causes of death among youth and its occurrence among college students is a matter of great concern. Challenges of transitional adulting and mental illness increase the likelihood of suicidal cognition in students. The objective of present study was to investigate the prevalence of suicide ideation and associated factors in a representative sample of Brazilian college students (n = 12,245).

Methods: Data were drawn from a nationwide survey and further subjected to estimate the prevalence of suicide ideation and its association with socio-demographic and academic characteristics. We performed logistic regression analyses upon a conceptual framework, considering individual and academic factors.

Results: The point-prevalence of suicide ideation among college students was 5.9 % (SE = 0.37). In the final regression model, variables associated with the likelihood of suicide ideation were psychopathology, sexual abuse, and academic variables, such as dissatisfaction with the chosen undergraduate course (OR = 1.86; IC95 % 1.43–2.41) and low academic performance (OR = 3.56; IC95 % 1.69–7.48). Having children and religious affiliation were inversely associated with the likelihood of suicide ideation.

Limitations: Participants were recruited from state capitals, which limited data generalizability to non-urban college students.

Conclusions: The impact of academic life on the mental health of students should be carefully monitored in in-campus pedagogical and health services. Early identification of poor-performance students with social disadvantages could indicate vulnerable ones who are much in need of psycho-social support.

1. Introduction

Suicide is the fourth leading cause of death among youth (World Health Organization, 2021), and the youth population's vulnerability for suicidal thoughts and behaviors (STB) raises concern of society and researchers (Mortier et al., 2018a; Mathieu et al., 2021; Pan et al., 2021; Lipson et al., 2022). Despite efforts to reduce suicide risk, worldwide rates of youth STB are not improving (Meter et al., 2022). A large meta-analysis (Mortier et al., 2018b) found high proportions of students presenting STB. Lack of consensus on clinical applicability of suicide risk factors (Franklin et al., 2017; Harmer et al., 2021) compromises students' STB prediction. Implicated factors should be critically examined to identify vulnerabilities and tailor preventive strategies.

Reasons associated with students' STB include low social-connectedness, early-life adversities, mood and substance-use disorders, and school-related problems (Cash and Bridge, 2009; Drum et al., 2009; Aggarwal et al., 2017; Cha et al., 2018; Li et al., 2019; Poland and Ferguson, 2022). During the adulting phase, youngsters are expected to assume more responsibility and autonomy. Additionally, students deal with demanding academic routines. Large university-based surveys (36 samples, n = 634,662) indicated that college students presented less STB than same-aged peers outside the university (Mortier et al., 2018a).

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Notwithstanding, a nationwide study ($n > 350,000$ students) indicates a rising trend of suicide ideation (SI) among students (Lipson et al., 2022). Besides lack of social support, financial difficulties, and other known risk factors for suicide, education-related factors are associated with a higher likelihood of mental illness and STB (Drum et al., 2009; Hansen and Lang, 2011; Mortier et al., 2015; Poland and Ferguson, 2022).

Few studies have investigated the relationship between academic context and STB. Findings relate psychological distress and STB to specific education-related factors, such as low academic performance, pressure to succeed, study workload, dissatisfaction, low motivation, and learning difficulties (Ross et al., 1999; Beiter et al., 2015; Auerbach et al., 2018; Barker et al., 2018; Duffy et al., 2020; Cheng et al., 2020; Sheldon et al., 2021). Conceptual frameworks (Victora et al., 1997) are necessary to guide the comprehension of mediators and moderators involved in STB among students.

Distinct models provide varied perspectives on the phenomenon of suicide reaching no consensus (Williams, 2001; O'Connor, 2011; World Health Organization, 2014; Franklin et al., 2017; Turecki et al., 2019; MacIntyre et al., 2021; McPherson et al., 2022). We built a conceptual framework to describe a hierarchical relationship between potentially associated factors and STB among college students. Sociodemographic characteristics, early-adversities, and mental disorders interact with each other increasing suicide risk (World Health Organization, 2014; Lipson et al., 2022). In addition, we hypothesize that educational-related factors can indicate psychological distress and, ultimately, be associated with students' STB, as pointed out previously (Cha et al., 2018; Sheldon et al., 2021; Poland and Ferguson, 2022).

Fig. 1 shows our conceptual framework hypothesis, in which distal variables influence the proximal ones, level by level (Victora et al., 1997; Turecki et al., 2019). To organize the framework, we considered contextual factors of students during the college period. The first level included sociodemographic characteristics (e.g., age, sex, and economic strata). A proxy for socioeconomic strata is the funding of higher education institutions (HEIs). In Brazil, students from private-funding HEIs must pay the tuition fees themselves - which could be an additional source of stress; while in public-funding HEIs, students don't have to pay for any tuition fees. The type of HEI funding, the number of attended classes, and the desire to drop-out or take a leave of absence were included in the intermediate level. The combination of sociodemographic vulnerabilities and academic contextual factors might impair students' motivation, strengthen negative feelings, and affect the proximal factors (Aggarwal et al., 2017). Being so, the proximal level included further academic factors (satisfaction with the course, and academic achievement), mental health, and substance use. Poor academic performance and dissatisfaction with the course might be perceived as stressful threats (Ross et al., 1999; Beiter et al., 2015), triggering suicidal cognitions, and worsening mental health (Cha et al., 2018; Poland and Ferguson, 2022). Finally, traumatic experiences and childhood sexual abuse are related to mental illness and further problems in adulthood life domains (e.g., suicide attempts, financial difficulties, and cumulative problems across adulthood) (McKay et al., 2022; Guiney et al., 2022). Lifetime sexual abuse could influence both the outcome and independent variables at all levels, being included as a confusion variable in our framework.

Robust studies with representative samples are needed to grasp manageable STB risk factors among students. Disentangling characteristics associated with STB is imperative for developing effective preventive strategies (Zalsman et al., 2016; Reifels et al., 2018; Rostami et al., 2021; Altavini et al., 2022). Aiming to fill up this gap, our study aimed to investigate the prevalence of SI and its associated factors in a nationwide sample of college students.

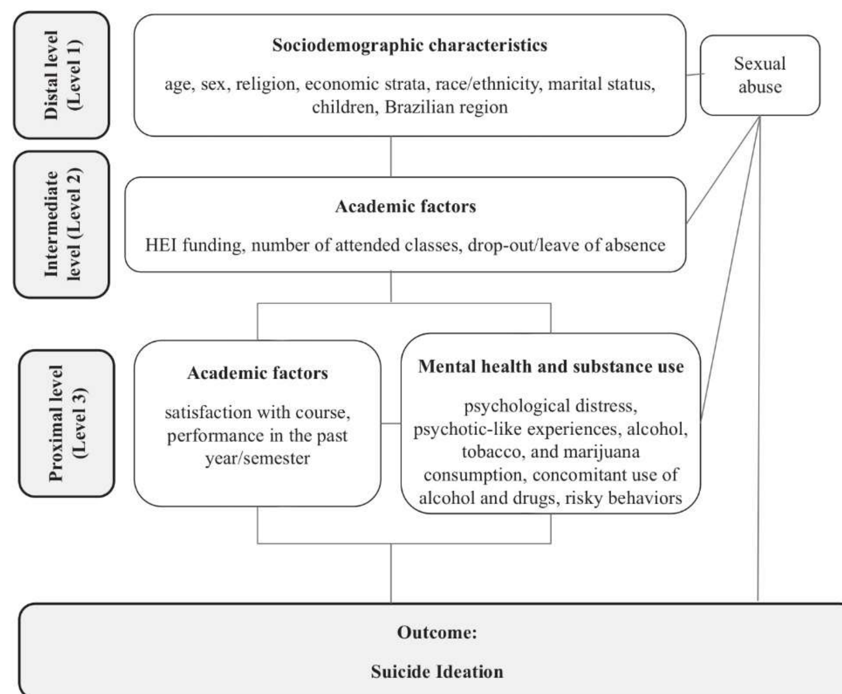

Fig. 1. Conceptual framework depicting proximal and distal exposures before outcome of suicide ideation.

2. Methods

2.1. Sampling

This is a nationwide cross-sectional study on the use of alcohol, tobacco, and other drugs among university students. The target population are college students from 27 Brazilian state capitals (Andrade et al., 2010). A probabilistic and stratified sample from public and private HEIs was selected and recruited in a two-stage sampling process. Firstly, the HEIs were randomly selected using the schools list, provided by the Brazilian Ministry of Education. After agreeing to take part in the survey, the HEIs provided a list of all classroom-based undergraduate programs, which allowed the researchers to randomly select the classes. Class is here defined as a group of students attending a given course of the undergraduate program. Data collection was completed in 2009.

A total of 654 classes were selected. All students of the selected classes were invited to volunteer. The response rate was 95.6 % considering the students who were in class during the survey. Because the size of the HEIs and the classes were not always the same (in terms of the number of students), these conglomerates were of unequal sizes. In general terms, the sampling design consisted of a random sample, stratified by different size clusters, selected in two stages. It was necessary to consider cluster-size and the intraclass correlation to perform estimates and data analyses. Detailed information of the sampling process is described elsewhere (Andrade et al., 2010).

2.2. Participants

The initial survey sample was 12,721 students. Ten questionnaires were excluded because respondents had claimed to use the dummy drug "*Relevin*". Additionaly 466 participants were excluded because they did not answered the SI item. Hence, a final sample of 12,245 valid questionnaires was considered for analysis.

2.3. Measures

All students completed a structured, anonymous, self-administered questionnaire consisting of 98 closed questions with sociodemographic characteristics, academic characteristics, and an emphasis on drug use and related disorders, risk behaviors, and the existence of psychiatric comorbidity (depressive symptoms, psychotic symptoms, and nonspecific psychological complaints).

The present study considered sociodemographic and academic characteristics, past-month consumption of alcohol, tobacco, and marijuana, past-month risk behaviors, and mental health questions as independent variables. To better control the outliers' effect, the age was categorized into four age brackets: up to 18 years old, 18–24, 25–34, and 35 years and over.

Suicide ideation was defined as the primary outcome for all analyses. Prior SI is one of the main factors associated with suicide attempts and deaths (Franklin et al., 2017; Large et al., 2021), regarded as essential information for adequate suicide-risk assessment and treatment referral (Jobes and Joiner, 2019; Hawton et al., 2022). Considering that not all individuals with SI will engage in life-threatening behaviors, early identification of those considering suicide can help offer timely interventions and prevent tragic outcomes (Harmer et al., 2021; Hawton et al., 2022).

The outcome was assessed by item#9 from the Beck Depression Inventory-II (BDI-II), a validated self-report tool for use by the Brazilian Portuguese-speaking population (Gomes-Oliveira et al., 2012). In BDI-II item#9, the individual is asked to select the one that best describes how they have felt over the past two weeks, based on the following statements: (0) "*I don't have thoughts of killing myself*"; (1) "*I have thoughts of killing myself, but I would not carry this out*"; (2) "*I would like to kill myself*"; (3) "*I would kill myself if I had the chance*". Considering previous literature (Wenzel et al., 2010; American Psychiatric Association, 2013), we considered a broad definition of SI, which included any thoughts, beliefs, desires, or other cognitions of killing oneself, even if one would not carry it out. Thus, the score of item#9 was dichotomized into a "yes/no" variable to denote the presence (≥ 1) or absence of SI, as adopted in previous studies (Fitzpatrick et al., 2005; Arria et al., 2009; Farabaugh et al., 2012).

Three clusters of independent variables were considered: (1) Sociodemographic variables, e.g., age, sex, economic strata, race/ethnicity, marital status, religion, having children, paid activity, and Brazilian region; (2) Clinical factors, e.g. past-month psychological distress; psychotic-like symptoms; consumption of alcohol, tobacco, and marijuana, concomitant alcohol and drugs use, and binge-drinking; risky behaviors, and lifetime sexual abuse; and (3) academic characteristics such as study field, current year in college/university, number classes, course period, HEI funding, last semester academic performance, thoughts about dropping-out or leave of absence throughout the course, and current satisfaction with the undergraduate course. Taking into account the variables from our dataset, we hypothesized a hierarchical conceptual framework - presented in Fig. 1 - to guide our multiple logistic regression. Building this hierarchical model considered: (1) timeframe of each variable; (2) relationship between SI and the independent variables in literature; (3) contextual factors of students during the college period.

The self-administered version of the Short K6 Scale (Kessler et al., 2002) was used for tracking psychological distress in the last 30 days. This tool has six-item Likert scale questions, to indicate the temporary duration of the symptoms asked about, from "all the time" (4) to "never" (0). The K6 scale was designed to be sensitive around the threshold for the clinical significance range of psychological distress (Kessler et al., 2010; National Comorbidity Survey and Harvard Medical School, 2005). The higher the score of K6, the higher the level of distress, which is considered an indicator of mental health. For analytical purposes, the score in this Brazilian sample was dichotomized to indicate the presence (score ≥ 6) or absence of psychological distress.

Psychotic-like experiences were unusual symptoms self-reported by students using four questions from the Self-Report Questionnaire (SRQ). Students were asked to answer "yes" or "no" to following questions: (1) "*Do you feel that someone, somehow, wants to hurt you?*"; (2) "*Are you someone much more important than most people think?*"; (3) "*Have you noticed any interference or other strange problems with your thinking?*"; and (4) "*Do you hear voices you don't know from where they come or that other people can't hear?*". The World Health Organization (WHO) recommends the SRQ for quickly detecting and classifying individuals in the community presenting persecutory symptoms, especially in developing countries (Harding et al., 1980; Mari and Williams, 1986; Salleh, 1990). Psychotic-like experiences can be regarded as an indicator of reduced psychological functioning (Unterrassner et al., 2017), social achievement (Rössler et al., 2007), and health status (Nuevo et al., 2012). From the perspective of the psychosis continuum model (van Os et al., 2008), a sizable proportion of people living in the community may present some of the symptoms described, but without clinical relevance. For analytical purposes, the items were grouped into a dichotomized variable to denote the presence or absence of psychotic-like experiences.

The structured questionnaire Alcohol, Smoking, and Substance Screening Test Involving (ASSIST) was used for collecting data about substance use. The ASSIST covers the use of nine types of psychoactive substances in eight questions. For investigating the use frequency of each substance, students were asked "*how many times have you used this drug in the past 30 days?*". Possible responses ranged from 1 ("haven't used it") to 6 ("4 times a day or more"). We used data about the substances most commonly consumed by students: alcohol, tobacco, and marijuana. For analysis, the items were dichotomized in a "yes/no" variable to denote users and non-users. The past-month use of alcohol combined with non-prescribed substances (inhalants, marijuana, cocaine, crack-cocaine, merla, amphetamines, anticholinergics, tranquilizers, opiate analgesics, sedatives, anabolic androgenic steroids,

hallucinogens, ecstasy, and synthetic drugs) investigated concomitant use. Students were classified into four mutually exclusive sub-groups: non-users, alcohol-users, drug-users, and concomitant use of alcohol and drugs, to denote respectively no consumption of either alcohol or drugs, any frequency of alcohol use, using at least one of the non-prescribed substances, and using both alcohol and at least one drug.

Other relevant topics were addressed in the survey by individual questions, such as (a) the prevalence of risk behavior (e.g.: involvement in arguments and fights; drink-driving behavior; taking a ride with a drunk driver, etc.), (b) use of multiple substances, (c) university course and academic life: study field ("*What is the study area of your course?*"), current year in college/university ("*What year (or semester) are you in?*"), current course period ("*Is your course full-time?; For non-full-time courses, what is your class period?*"), last semester academic performance ["*In the past semester or academic year, you have: (1) Passed all subjects; (2) I resat for the exam but passed these subjects; (3) Pending subjects, but have not missed the year; (4) Repeated the year; (5) Other*"], thoughts about dropping out throughout the program, ["*Regarding your undergraduate course (circle only one answer): (1) I've never thought of dropping out of the course or taking a leave of absence; (2) I've thought of dropping out of the course or taking a leave of absence; (3) I took a leave of absence once*") and current satisfaction with the undergraduate course ("*Are you satisfied with the undergraduate course you have chosen?*"]

For analytical purposes, the "sexual abuse" variable was considered as a confusion variable. A recent longitudinal population-based study (Guiney et al., 2022), found associations between childhood sexual abuse and diverse problems in multiple life domains across adulthood. Therefore, lifetime sexual abuse could influence both the dependent and independent variables at all levels.

2.4. Analysis

We performed bivariate analyses through Pearson's chi-square test with Rao-Scott correction (Rao and Scott, 1984) to examine the association between the independent variables and the outcome. For the bivariate analyses, the null hypothesis was rejected at the level of $p \leq 0.05$. Following, a hierarchical logistic regression model was used to investigate associated factors for SI, adjusting for covariates. In order to provide a comprehensive picture, the hierarchical model for logistic regression analysis included variables with a p-value ≤ 0.2, or with previous literature endorsement and clinical applicability, as recommended (Ughade, 2013; Hosmer et al., 2013). In the first step of the hierarchical multivariate model, we analyzed the first-level variables and retained those that were associated with the outcome with $p \leq 0.2$. Then, we added the second-level variables and so on, until the most proximal level. For each level, the variables with a p-value >0.2 were removed in stepwise deletion, as recommended by previous literature for model-fitting (Maldonado and Greenland, 1993; Wasserstein et al., 2019). The adjusted Wald chi-square test (Judge et al., 1985; Korn and Graubard, 1990) was conducted to obtain an adjusted p-value for categorical variables. Finally, a goodness-of-fit of the final adjusted model was estimated with the Hosmer-Lemeshow test, with Archer-Lemeshow correction (Archer and Lemeshow, 2006; Archer et al., 2007; Heeringa et al., 2017). For the final adjusted model, the logistic regression coefficients were reported as odds ratio (OR), with 95 % confidence intervals (CI).

We used STATA, version 15 (StataCorp, 2017) to run the models. All the analyses were performed with the survey option ('svy' command) which allowed correction with weights, strata, and primary sampling units to adjust for sampling error and unequal probability of selection. The estimate of prevalence and regression analysis was presented as weighted indicators for the target population.

2.5. Ethics statement

All participants provided written informed consent before participating in the data collection. The Ethics Committee for the Analysis of Research Projects at the University of São Paulo Medical School approved the present study (protocol# 4.711.369).

3. Results

The students' sample was composed mostly of women rather than men (57.5 % vs. 42.5 %), with a mean age of 25.4 years (SE = 1.0). The majority were single or never married (77.2 %). Additionally, most students self-identified themselves as a person of "white" skin-color (62.2 %) and claimed to follow a religion (84.7 %). Almost half of the students were from middle-to-high-income families (48.7 %) (Brazilian Association of Research Companies - Associação Brasileira de Empresas de Pesquisa - ABEP, 2011). Around two-thirds of students (64.7 %) were enrolled in Humanities undergraduate programs, from private-funding HEIs (77.7 %). Almost half of the students presented at least one psychotic-like experience in the past month (49.1 %), more than a third (32.5 %) presented psychological distress, and 5.9 % presented SI in the past two weeks. Table 1 shows the weighted proportions of the college students' main characteristics.

Tables 2, 3, and 4 show the weighted prevalence of SI according to (1) sociodemographic characteristics, (2) academic characteristics, and (3) substance use, risky behaviors, and mental health characteristics, respectively. Additionally, each table shows the results for each bivariate analysis.

From the sociodemographic characteristics, age, sex, religion, children, and region of the HEI were associated with the presence of SI in the past two weeks. Regarding academic factors, the following variables were associated with the presence of SI: satisfaction with the chosen undergraduate course, thoughts of drop-out/leave-of-absence, and HEI type. Finally, past-month alcohol consumption, risky behaviors, sexual abuse, past-month psychological distress, and psychotic-like experiences were associated with SI in the last 15 days.

Table 5 presents the SI associated factors after adjusting for covariates, from the logistic regression analysis. Having a religion (OR = 0.64; 95%CI 0.43–0.96) and having children (OR = 0.22; 95%CI 0.06–0.79) were associated with lower likelihood of SI. Economic strata had a marginal effect on SI, being higher among those from lower economic-classes (OR = 1.33; 95%CI 0.99–1.79). Victims of sexual abuse had more than three times the likelihood of SI than those who have never been abused (OR = 3.52; 95%CI 2.30–5.38). Students that stated having forced someone to have sexual intercourse also presented higher odds for SI (OR = 5.68; 95%CI 1.84–17.51), but this estimate is inaccurate, once the 95%CI is large. Students that thought about dropping-out of the program or taking a leave presented more than two times the likelihood of SI than those who have never thought about it (OR = 2.59; 95%CI 1.65–4.05). Students dissatisfied with the course had 86 % higher odds of SI than those who were satisfied (OR = 1.86; 95%CI 1.43–2.41). Those with lower performance in the last semester had more than three times the likelihood of SI than those with a higher performance (OR = 3.56; 95%CI 1.69–7.48). The number of attended classes was also associated with SI, but these estimates are inaccurate, considering the large 95%CI. Finally, regarding mental health, students who were under psychological distress had 5.40 higher odds of SI in the last 15 days than those who were not (OR = 6.40; 95%CI 4.19–9.77); students with at least one psychotic-like experience had more than two times the likelihood of SI than those without any psychotic-like experience (OR = 2.08; 95%CI 1.47–2.95). After adjusting for the covariates, none of the substance consumption and risky behavior variables were associated with SI.

4. Discussion

To our knowledge, this is the first nationwide study investigating SI and associated factors among Brazilian college students. The large sample-size, sampling methods, and high response rate allow

Table 1
Weighted proportions, of the college students' characteristics, from the I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras, 2009.

Variable	n	%	SE◇
Individuals			
Total sample	12,245	100.00	
Sociodemographic characteristics			
Age			
Up to 18 years old	301	1.94	0.52
18 to 24	8327	60.16	6.18
25 to 34	2508	25.22	4.26
35 and over	987	12.69	2.56
Sex			
Masculine	5418	42.49	1.62
Feminine	6800	57.51	1.62
Religion			
No	1990	15.28	1.32
Yes	10,200	84.72	1.32
Economic strata[1]			
A	3148	28.63	2.93
B	5732	48.65	2.21
C/D/E	3011	22.72	1.98
Race/ethnicity			
White	6842	62.17	2.02
Black/brown	4458	31.23	2.21
Asian, indigenous, and others	803	6.60	0.82
Marital status			
Married/Cohabitant	2017	19.10	3.70
Never married	9927	77.23	4.80
Previously married	222	3.68	1.19
Children			
No	10,387	81.36	4.33
Yes	1775	18.64	4.33
Brazilian Region			
North	2164	3.61	1.16
Northeast	3089	18.05	5.00
Southeast	2479	67.67	8.09
South	2373	3.84	1.76
Midwest	2140	6.83	2.73
Academic characteristics			
Study area			
Biological and Health Sciences	3114	18.05	4.05
Exact Sciences (Math and Science)	3160	17.22	3.21
Humanities	5778	64.73	4.36
Current year in college/university			
1st year	4342	29.24	3.57
2nd year	2608	26.70	4.75
3rd year	2604	17.65	3.40
4th year	1659	14.03	2.49
5th/6th years	904	10.70	4.44
Number of attended courses			
Up to 3	844	10.26	2.26
4 to 6	6735	58.89	6.75
7 to 9	3819	26.51	3.85
10 or over	847	4.34	1.70
Course period			
Daytime	4398	37.27	4.46
Night-time	4453	47.13	5.51
Full time	3216	15.61	4.29
HEI funding			
Public	6068	22.32	6.03
Private	6177	77.68	6.03
Mental health and substance use			
Suicide ideation			
No	11,377	94.08	0.37
Yes	868	5.92	0.37
Psychological distress			
No	7406	67.55	0.81
Yes	3718	32.45	0.81
Psychotic-like experiences			
None	5937	50.91	1.82

Table 1 (*continued*)

Variable	n	%	SE◇
At least one	5757	49.09	1.82
Alcohol consumption			
No	5259	42.13	2.51
Yes	6828	57.87	2.51
Tobacco consumption			
No	10,533	82.00	1.28
Yes	1650	18.00	1.28
Marijuana consumption			
No	11,374	92.17	0.82
Yes	758	7.83	0.82

◇ Standard Error.
[1] According to the Brazil Economic Classification Criterion (Brazilian Association of Research Companies - ABEP, 2011).

Table 2
Weighted prevalence, in the last 15 days, of suicide ideation among brazilian college students according to sociodemographic characteristics, from the I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras, 2009.

Variable	Suicide Ideation				x^2 p-value◇
	No		Yes		
	%	95%CI	%	95%CI	
Age					0.015
Up to 18 years old	1.98	1.16–3.36	1.26	0.60–2.66	
18 to 24	59.40	46.33–71.27	72.17	63.78–79.26	
25 to 34	25.51	17.77–35.19	20.47	14.22–28.55	
35 and over	13.10	8.64–19.37	6.09	3.20–11.30	
Sex					0.032
Masculine	42.20	38.89–45.58	47.09	43–50.79	
Feminine	57.80	54.42–61.11	52.91	49.21–56.57	
Religion					0.005
No	14.75	12.19–17.73	23.63	18.36–29.86	
Yes	85.25	82.27–87.81	76.37	70.14–81.64	
Economic strata[1]					0.660
A	28.81	23.19–35.17	25.77	20.44–31.92	
B	48.57	44.07–53.09	49.97	40.27–59.68	
C/D/E	22.62	18.90–26.84	24.26	17.29–32.91	
Race/ethnicity					0.214
White	61.94	57.75–65.95	65.87	57.28–73.53	
Black/Brown	31.61	27.23–36.33	25.18	16.97–35.67	
Asian, indigenous, and others	6.46	5.01–8.29	8.95	5.71–13.76	
Marital status					0.164
Married/ Cohabitant	19.53	2.97–28.33	12.10	8.89–16.27	
Never married	76.71	65.25–85.24	85.49	81.46–88.77	
Previously married	3.76	1.89–7.35	2.41	0.68–8.17	
Children					0.011
No	80.54	69.68–88.17	94.37	89.32–97.12	
Yes	19.46	11.83–30.32	5.63	2.88–10.68	
Paid activity					0.559
None	39.76	34.99–44.74	35.50	23.61–49.50	
Up to 20 h/week	18.11	15.43–21.14	20.21	15.33–26.15	
Up to 40 h/week	42.13	35.93–48.58	44.29	31.29–58.13	
Brazilian Region					0.029
North	3.57	1.87–6.72	4.11	2.05–8.05	
Northeast	17.79	9.94–29.80	22.23	12.42–36.54	
Southeast	68.08	50.52–81.67	61.18	43.13–76.60	
South	3.82	1.50–9.37	4.15	1.86–9.01	
Midwest	6.74	2.99–14.47	8.33	3.67–17.83	

◇ Pearsons' X^2, with Rao-Scott correction.
[1] According to the Brazil Economic Classification Criterion (Brazilian Association of Research Companies - ABEP, 2011).

generalizing the results for college students, without overestimation. Potentially, a representative sample of Brazilian students presents generalizable results for Latin-American and analogous upper-middle-income countries, once they share sociodemographic characteristics or

Table 3
Weighted prevalence, in the last 15 days, of suicide ideation among Brazilian college students according to academic characteristics, from the I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras, 2009.

Variable	Suicide Ideation				x^2 p-value◇
	No		Yes		
	%	95%CI	%	95%CI	
Study field					0.955
Biological and health sciences	18.05	11.34–27.49	18.06	9.75–31.02	
Exact Sciences (Math and science)	17.26	11.72–24.69	16.55	10.73–24.66	
Humanities	64.69	55.67–72.77	65.39	52.00–76.72	
Current year in college/ university					0.653
1st year	29.11	22.72–36.45	31.44	17.65–49.53	
2nd year	26.83	18.53–37.15	24.62	14.62–38.38	
3rd year	17.77	11.79–25.89	15.74	11.46–21.23	
4th year	14.19	9.86–19.99	11.61	6.91–18.86	
5th year	8.76	3.16–22.07	7.43	3.15–16.54	
6th year	10.44	4.21–23.62	14.92	7.04–28.89	
Number of attended classes					0.070
Up to 3	10.66	6.78–16.38	3.91	1.74–08.56	
4 to 6	58.84	44.89–71.50	59.66	46.88–71.25	
7 to 9	26.42	19.28–35.05	27.96	20.65–36.66	
10 or over	4.08	1.81–8.94	8.47	2.96–21.88	
Course period					0.670
Daytime	37.12	28.52–46.62	39.55	31.17–48.60	
Night-time	47.35	36.42–58.53	43.61	33.17–54.63	
Full time	15.53	8.63–26.35	16.84	11.54–23.92	
Drop-out / Leave of absence					0.000+
Never thought about dropping out the program or leave of absence	65.27	61.48–68.87	43.74	34.84–53.06	
Have thought about dropping out the program or leave of absence	27.61	25.23–30.12	50.08	43.37–56.79	
Have already taken a leave of absence at some point of the program	7.12	4.63–10.80	6.18	2.94–12.50	
HEI funding					0.009
Public	21.98	12.35–36.03	27.78	16.17–43.41	
Private	78.02	63.97–87.65	72.22	56.59–83.83	
Satisfaction with the chosen course					0.000+
Yes	92.99	89.99 - 95.13	80.43	74.22–85.43	
No	7.01	4.87–10.01	19.57	14.57–25.78	
Performance in the past semester/ year					0.081
Passed all courses	64.90	57.93–71.29	59.23	50.12–67.75	
Resat for the exam, but passed these courses	11.28	8.06–15.56	14.03	10.28–18.85	
Pending courses, but have not missed the year	10.09	7.47–13.49	9.53	4.57–18.81	
Repeated the year	2.24	1.24–4.01	6.05	3.17–11.24	
Other	11.49	7.85–16.51	11.16	5.02–23.02	

◇ Pearsons' X^2, with Rao-Scott correction.
+ p-value <0.001.

Table 4
Weighted prevalence, in the last 15 days, of suicide ideation among Brazilian college students according to substance use, risky behaviors, and mental health characteristics (in the last 30 days), from the I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras, 2009.

Variable	Suicide Ideation				x^2 p-value◇
	No		Yes		
	%	95%CI	%	95%CI	
History of sexual abuse					0.002
No	97.06	95.84–97.93	91.38	87.36–94.21	
Forced someone to have sex	0.91	0.53–1.56	3.34	1.23–8.79	
Was forced to have sex	2.04	1.49–2.78	5.27	3.05–8.96	
Alcohol consumption					0.000+
No	42.72	37.74 - 47.86	32.62	26.71–39.14	
Yes	57.28	52.14–62.26	67.38	60.86–73.29	
Tobacco consumption					0.730
No	82.07	79.14–84.67	80.90	74.59–85.95	
Yes	17.93	15.33–20.86	19.10	14.05–25.41	
Marijuana consumption					0.520
No	92.22	90.49–93.65	91.39	87.17–94.31	
Yes	7.78	6.35–9.51	8.61	5.69–12.83	
Concomitant use of alcohol and drugs					0.069
Non-user	36.97	32.60–41.57	27.46	22.55–32.98	
Alcohol user	38.73	34.05–43.63	48.67	42.01–55.38	
Drugs user	5.75	3.44–9.45	5.16	3.00–8.76	
Concomitant use of alcohol and drugs	18.55	15.05–22.64	18.71	13.78–24.89	
Binge drinking[1]					0.912
Non-binge	41.40	38.53–44.33	42.65	34.84–50.85	
Binge drinking	35.57	32.64–38.62	34.89	28.81–41.51	
Heavy drinking	23.03	19.17–27.40	22.46	17.09–28.92	
Risk behaviors					0.043
None	57.68	55.55–59.78	49.86	42.30–57.41	
At least one	42.32	40.22–44.45	50.14	42.59–57.70	
Psychological distress					0.000+
No	70.26	68.64 - 71.82	24.44	17.20–33.49	
Yes	29.74	28.18–31.36	75.56	66.51–82.80	
Psychotic-like experiences					0.000+
None	52.44	48.26 - 56.59	25.55	18.70–33.87	
At least one	47.56	43.41–51.74	74.45	66.13–81.30	

◇ Pearsons' x^2, with Rao-Scott correction.
+ p-value <0.001.
[1] According to Centers for Disease Control and Prevention (CDC, 2019) and National Institutes of Health (NIH/NIAAA, 2020) criteria.

similar developmental stages. In this study, we found a 5.9 % point-prevalence of SI among college students. Suicide ideation was conspicuously associated with sociodemographic characteristics and mental health determinants. Also, we found a salient association between SI and academic variables, such as dissatisfaction with the course, deficient academic performance, and speculation about dropping-out of the program. Our findings provide background for developing in-campus interventions and STB prevention among students.

4.1. Suicide ideation

Suicide-related research is challenging due to several matters. First, there is no consensus about the operational definition of SI (Goodfellow et al., 2018; Harmer et al., 2021). Some definitions include suicide planning deliberations, while others consider it to be a discrete stage of suicidal behavior. As a consequence, comparisons across studies are

Table 5
Suicide ideation associated factors from Brazilian college students. I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras, 2009.

Variable	OR	95 % CI
Level 1: Sociodemographic characteristics + sexual abuse		
Age		
Up to 18 years old	1	-
18 to 24	1.71	0.95–3.09
25 to 34	1.15	0.58–2.30
35 and over	1.15	0.25–5.33
Sex		
Masculine	1	–
Feminine	0.86	0.71–1.05
Economic strata		
A	1	–
B	1.35	0.91–2.01
C/D/E	1.33	0.99–1.79
Religion		
No	1	–
Yes	0.64	0.43–0.96
Marital status		
Married/cohabitant	1	–
Never married	0.66	0.42–1.03
Previously married	1.20	0.22–6.48
Children		
No	1	–
Yes	0.22	0.06–0.79
History of sexual abuse		
No	1	–
Have forced someone to have sexual intercourse	5.68	1.84–17.51
Was forced to have sexual intercourse	3.52	2.30–5.38
Level 2: Level 1 + intermediate-level academic factors		
Number of attended classes		
Up to 3	1	–
4 to 6	3.85	1.38–10.78
7 to 9	3.98	1.51–10.48
10 or over	7.35	1.47–36.81
Drop-out / Leave of absence		
Never thought about dropping-out the program or leave of absence	1	–
Have thought about dropping-out the program or leave of absence	2.59	1.65–4.05
Have already taken a leave of absence at some point of the program	1.44	0.62–3.37
Level 3: Level 2 + proximal-level academic factors + mental health, risky behavior and substance use		
Satisfaction with the chosen undergraduate course		
Yes	1	–
No	1.86	1.43–2.41
Performance in the last semester		
Passed all courses	1	–
Resat for the exam, but passed these courses	0.94	0.54–1.64
Pending courses, but have not missed the year	0.56	0.28–1.14
Repeated the year	3.56	1.69–7.48
Psychological distress		
No	1	–
Yes	6.40	4.19–9.77
Psychotic-like experiences		
None	1	–
At least one	2.08	1.47–2.95
Goodness-of-fit	F^* = 0.265	

*Hosmer-Lemeshow test, corrected with Archer-Lemeshow statistic

regarded as limited or meaningless in meta-analyses (Harmer et al., 2021). Second, several studies extracted data from different self-report scales - BDI-II, Patient Health Questionnaire (PHQ-9), Columbia Suicidal Severity Rating Scale, or even single-item questions that vary greatly in wording, timeframe, and intensity of STB. Third, many suicide-related findings among college students have limited generalizability (Mortier et al., 2018b), mostly due to non-probabilistic sampling from restricted geographic regions. Most studies were conducted in western high-income countries, and few have focused on low-and-middle-income countries (O'Connor and Nock, 2014; Mortier et al., 2018a; Naghavi, 2019). The lack of standardized definitions, tools, and measures, combined with restricted samples undermines cross-study comparisons and highlights the importance of conducting robust and representative research on suicide among college students (O'Connor and Nock, 2014).

We found no comparable study focusing on suicide with a representative sample of college students in Brazil. SI rates found in large-scale samples from USA students ranged from 1.9 % to 14.9 %, according to the time frame adopted, which ranged from 'last two weeks' to 'past year'. (American College Health Association, 2015; Bernanke et al., 2017; Lipson et al., 2022). The 5.9 % point prevalence indicates that Brazilian students presented SI in an expected proportion. However, direct comparisons cannot be guaranteed. Methodological differences and limitations must be considered when interpreting these findings. Furthermore, longitudinal data (Green et al., 2015; Bernanke et al., 2017; Lipson et al., 2022) are necessary to demonstrate the trend of students' mental health and the predictive value of reporting SI.

A large meta-analysis (Mortier et al., 2018b) with 634,662 students from 36 samples indicated a year-prevalence of 10.6 % of SI among college students. This means that one out of 10 students will consider suicide within a year. Furthermore, a considerable proportion (about 20 %) of students with SI reported subsequent suicide attempts (Mortier et al., 2018b). This bulky estimate of suicide attempters following the presence of ideation should serve as a warning call over students' mental health. Careful interpretation of suicide-related data should account for the sample representativeness, measurement tool, time frame, and specific population, among other factors. Considering that not all suicide ideators progress to attempts, the gap between the onset of SI and self-harm behaviors represents a big window for intervention (Harmer et al., 2021). SI morbidity should not be underestimated and must become an important intervention target (Jobes and Joiner, 2019).

4.2. Sociodemographic and clinical determinants

Although previous studies have found associations between suicide-related outcomes with age, sex, and ethnicity (Cha et al., 2018; Poland and Ferguson, 2022; Lipson et al., 2022), we did not find such association in our sample. Notably, differences between age-groups and sex used to be more evident when the outcome is suicide death rather than SI. Ethnicity classifications are too heterogeneous and have large variations on the estimates across studies (Troya et al., 2022). Additionally, interactions between demographic characteristics and environmental or cultural aspects could explain these variations across studies (Cha et al., 2018).

In line with previous studies (Eskin et al., 2016; Auerbach et al., 2019; Li et al., 2019; Turecki et al., 2019; Fazel and Runeson, 2020; Sheldon et al., 2021; Casey et al., 2022; Poland and Ferguson, 2022), we found high odds for SI among students with self-reported psychotic-like experiences, and even higher among those under psychological distress. The association between suicide and poor mental health finds extensive support in literature (Auerbach et al., 2019; Li et al., 2019; Turecki et al., 2019; Fazel and Runeson, 2020; Poland and Ferguson, 2022; Sheldon et al., 2021; Casey et al., 2022). This relationship is especially consistent among students during their adulting phase (Ross et al., 1999; Kessler et al., 2005; Hansen and Lang, 2011; Beiter et al., 2015; Mortier et al., 2015; Auerbach et al., 2016; Duffy et al., 2020; Sheldon et al., 2021), with demanding academic routines, whose poor mental health can be related to SI. It is reasonable to hypothesize that academic factors could exert a moderating effect between mental health and STB.

Previous experiences of sexual abuse were associated with higher odds of SI among students (Jiang et al., 2010; Aggarwal et al., 2017; Cha et al., 2018; Sheldon et al., 2021; Poland and Ferguson, 2022). While childhood abuse increases the vulnerability to suicide, the proximal

event may trigger STB among students. Despite previous studies pointing to associations between suicide and substance misuse (Hallfors et al., 2004; Hansen and Lang, 2011; Marraccini et al., 2020), after adjusting for covariates, this relation did not hold in our study. Differences between studies' findings can be related to populations' cultural, economic, and sociodemographic characteristics, or variations in the instrument used, time frame for the prevalence, and sampling process.

Consistent with literature, having a religion and having children were associated with lower odds of SI (Qin and Mortensen, 2003; Fazel and Runeson, 2020; Oh et al., 2022). Some religious dogmas over suicide can refrain suicidal ideations (Oh et al., 2022). Additionally, religious communities might strengthen the sense of belonging and social cohesion. Likewise, feelings of self-worth and emotional attachment can be protective for parents (Qin and Mortensen, 2003).

4.3. *Academic and contextual determinants*

We found a noteworthy association between SI and academic determinants such as thoughts of dropping out, poor academic performance, and dissatisfaction with the course. Albeit current literature confirms the role of mental health on academic life (Dyrbye et al., 2010; Duffy et al., 2020; Jeffries and Salzer, 2021), suicide-related outcomes and academic characteristics are still poorly investigated. Dissatisfaction with university is related to stress levels among students (Lyrakos, 2012). Finding reasons for academic efforts can be hard for dissatisfied students. Similar to the effect of life-dissatisfaction with SI, discontented students can engage in self-harm thoughts (Goldman-Mellor et al., 2014).

There are several indicators of academic satisfaction among college students. Attrition to college measures the proportion of students dropping-out of college (Tertiary Collection of Student Information. Australian Government, 2022). Both attrition rate and desire to dropout are associated with feelings of failure, hopelessness, anxiety, and burnout (Dyrbye et al., 2010; Duffy et al., 2020; Jeffries and Salzer, 2021). Therefore, it is reasonable to argue that suicidal cognitions might be activated when vulnerable individuals are under academic pressure and need to cope with stressful situations (Wenzel et al., 2010). Thoughts of dropping-out and negative feelings towards the academic environment might impair the students' motivation, jeopardizing their academic performance and satisfaction with college.

The relationship between poor academic achievement and STB is well known among adolescents and high-school students (Evans et al., 2004; Jiang et al., 2010; Hansen and Lang, 2011; Mortier et al., 2015), especially when self-demanding perfectionistic beliefs are activated during stressful contexts (O'Connor and Nock, 2014). In college settings, academic failure can lead to a sense of defeat or humiliation, boosting entrapment feelings (Taylor et al., 2011; Klonsky et al., 2018). All these findings indicate that students with lower grades and thoughts about dropping-out cluster as a group of individuals with poor mental health and increased vulnerability for SI. These indicators should be urgently considered by educators, professors, and students for the early identification of vulnerable individuals. Efforts should be implemented to avoid the progression of ideation to life-threatening behaviors.

College students are the next decades society's human capital. Therefore, close surveillance of their values, behaviors, and performance is of utmost importance to the forthcoming global economy (Mortier et al., 2018b). Our findings serve as a warning call to the early identification of students with psychological distress and suicide risk. Countrywide data of college students investigating the role of academic variables on suicide ideation contribute to current knowledge on college health. Prevention plans should be tailored combining different level strategies (van der Feltz-Cornelis et al., 2011; Altavini et al., 2022). Mental health promotion can help build important skills in students, reinforcing protective factors, and increasing knowledge, protective attitudes, and help-seeking behavior (Wilcox and Wyman, 2016). Vulnerable individuals should be monitored by keeping track of students' grades and expressed desire of dropping-out. Potentially, stakeholders could use valuable information about the students' characteristics to develop customized suicide prevention programs. Despite there is no sense to execute universal screening of suicidal ideation (LeFevre, 2014), the promotion of access to mental health services should be mandatory.

4.4. *Study limitations*

The present study used a representative sample from nationwide data of a large country with huge social, cultural, and economic inequalities. Despite the large geographical amplitude in Brazil, there were no significant between-region differences. Some limitations should be kept in mind for interpretation. First, as our sample was recruited from state capitals, our findings cannot be generalized to non-urban students. Second, using self-administered questionnaires is prone to recall errors and information biases. Nevertheless, the applied questionnaire was built using reliable and validated instruments. Third, responding bias should not be excluded, since respondents may be reluctant to disclose sensitive facts that are regarded as painful, uncomfortable, humiliating, shameful, or embarrassing, such as sexual abuse, drug consumption, and suicide-related questions. Fourth, the use of a single-item outcome may lead to an overestimation of prevalence (Millner et al., 2015). However, the large sample size and high response rate minimize this risk. Regarding the use of SI as outcome, it does not reflect a measure for risk of suicide, and the results of the present study should not be interpreted as risk for suicidal behaviors. Due to the use of secondary data, our coding of the collected variables was limited, so possible confounding factors may have been overlooked. The collected data did not include information about psychological or psychiatric treatments, therefore we could not adjust the model for this cofounder. Because data were collected in 2009, some characteristics of college students have changed over the last decade, indicating the need for updated studies with representative samples on this matter. Data-related limitations highlight the need for further studies addressing mental health outcomes in college students. Due to the multiple comparisons in our study, several methods - such as Bonferroni and False Discovery Rate - were recommended to avoid type I error. However, such corrections can exclude relevant variables (increasing type II error) or jeopardize the model adjustment to critical levels. Bearing in mind that false positives might emerge, we presented the model uncorrected for multiple comparisons, with careful interpretation of the 95%CI values and thresholds. Finally, the cross-sectional design does not allow causal inference on risk and protective factors for SI. Despite these limitations, our analyses were conducted to minimize its impacts, and our findings allowed us to depict STB among Brazilian college students and its relation to academic factors.

5. Conclusion

Key results of the present investigation indicated that, apart from general population known associated factors for suicide, college students present further risk factors, such as academic under-achievement, dissatisfaction with the course, and desire of dropping-out. The relationship between academic factors, psychological distress, and the transitioning phase of college students - marked by social, academic, and professional challenges - requires policy makers' attention. Universities stakeholders should examine and identify their students' vulnerabilities in the social-academic context of institutions. Prevention strategies are recommended for disadvantaged groups exposed to personal and contextual liabilities, coupled with access to mental health care and supportive academic services.

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Credit authorship contribution statement

LHA, LGO, AGA, and YPW conceived the original study, conducted data collection, and provided the database. LHA, LGO, AGA, CG, and YPW formulated the survey instrument. YPW and CSA conceived the study. CSA and APRA performed the literature search. CSA and GSL conducted the statistical analysis. CSA, APRA, GSL, and YPW wrote the draft version of the article. ACOS and YPW provided methodological assistance to this study. All authors have critically reviewed the manuscript and agreed to its dissemination in its current stage.

Conflict of interest

We declare no conflict of interest.

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2.3 Artigo III: Suicide among college students: much ado about nothing?

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Suicide among college students: much ado about nothing?

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Every September, social media are replete with yellow ribbons from suicide awareness campaigns. Not unusually, untrained media professionals report on suicide deaths, providing detailed information, photographs, and dramatic headlines. This kind of coverage not only exposes the bereaved but spotlights the act of suicide. Irresponsible sensationalistic reporting is associated with an increase in deaths by suicide.[1]

When at-risk people identify with the publicized act, it can trigger a suicide cluster – the so-called Werther effect. This is especially true among vulnerable young people. Some posts of awareness campaigns are rated by youngsters as triggering them a warning flag about suicide. But, is the awareness message reaching the right population? Do we have any clue about the effects of the Yellow September Campaign? Evidence about the effectiveness of this modality of universal prevention is insufficient.[2] Few studies have evaluated it, and most that have done so are methodologically flawed. The replicability and generalizability of their findings are limited by their ecological designs and restricted populations. Additionally, the reliability of suicide statistics is questionable, since studies indicate that suicide rates are underreported. Educators, practitioners, family members, policy-makers, and the media should reconsider how to measure the impact of awareness interventions and how to safely avoid further unnecessary deaths.

Although suicide is a leading cause of death among youth, the rate of suicidal behavior among college students is consistently lower than same-aged peers who are not in college.[3] When a student dies by suicide, the information is rapidly disseminated and leads to a number of reactions: students might keep secretly their identification with the deceased, feel guilty, or fear self-harm. This cascade also affects professors, administrators, the relatives of students, and society in general, who collectively claim for the immediate implementation of preventive measures at universities. This request is notably pressing when a suicide cluster occurs. However, criticisms are raised due to the lack of proven strategies and appropriate communication to refrain the waves of suicide in post-secondary educational settings.[4]

We know the meaning of “if you need to, ask for help,” but are at-risk people getting the message? There is no support for the applicability of universal prevention strategies among college students, except for means restriction.[4] Recent reviews indicate that multicomponent frameworks have positive effects when replicable interventions are built according to the characteristics of the target population.[5] Hence, a cogent suicide prevention program should be designed for each age cohort.

Emerging questions about current suicide prevention practices should be answered. Do awareness campaigns and appropriate media reporting suffice to avert more deaths? Is suicide avoidable in the target population? If so, which students would benefit from prevention programs? It is imperative to identify which students are becoming mentally ill and why, and which are at risk for suicide. Only evidence-based knowledge provides the foundation for effective prevention programs. Stronger evidence could be obtained from longitudinal studies with well-defined outcomes and replicable interventions. Otherwise, the effort devoted might end in futility or even worsen the statistics of self-inflicted death among youth.

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Disclosure

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3 ANÁLISE CRÍTICA

3.1 Artigo I

3.1.1 Discussão

O artigo intitulado "*Revisiting evidence of primary prevention of suicide among adult populations: A systematic overview*" apresentou uma síntese das principais evidências até o momento de sua publicação acerca dos efeitos de intervenções e estratégias de prevenção primária do suicídio na população adulta. Esse tema ainda carece de evidências robustas para subsidiar o desenvolvimento e implementação de planos e programas de prevenção de suicídio. O método de *Overview* (revisão sistemática de revisões sistemáticas) tem sido utilizado na literatura como forma de agrupar resultados de revisões sistemáticas acerca de um tema ainda não consolidado, possibilitando assim uma visão ampla do contexto estudado e suas lacunas na literatura. Prezando pela produção de conhecimento científico de qualidade, a revisão sistemática foi conduzida com base em critérios rigorosos e atuais, utilizando instrumentos previamente definidos para a extração de dados e avaliação metodológica dos artigos incluídos.

Dentre as revisões sistemáticas incluídas no estudo pudemos observar que o rigor metodológico foi consideravelmente falho, tendo a maior parte dos estudos sendo classificados como de qualidade baixa/criticamente baixa, o que levanta preocupações acerca da qualidade das evidências sobre estratégias de prevenção primária do suicídio. As principais intervenções de prevenção avaliadas foram classificadas em dois grandes grupos: as intervenções individuais, que se caracterizam por estratégias aplicadas e avaliadas individualmente, como: restrição aos meios, estratégias educativas e de conscientização, treinos de *gatekeepers* e cobertura midiática; e os "programas multicomponentes", que se caracterizam pela combinação de duas ou mais intervenções em um único programa de prevenção.

Os principais resultados encontrados confirmaram parcialmente recomendações prévias. Pudemos encontrar alguns resultados promissores de revisões com qualidade média acerca de programas multicomponentes, especialmente quando adaptados para as especificidades das populações alvo. Acerca das intervenções individuais, encontramos maiores evidências para redução de suicídio relacionadas a estratégias de restrição de

acesso a meios letais. Também há evidências de que comunicações midiáticas de qualidade podem ajudar a prevenir o suicídio. Adicionalmente, pudemos observar que os resultados das revisões incluídas também indicavam efeitos positivos em intervenções de treino de *gatekeeper* e programas educacionais/de conscientização relacionados a desfechos indiretamente ligados a comportamentos suicidas, como aumento de comportamentos protetivos e melhora do conhecimento sobre suicídio.

3.1.2 Contribuições

Pela primeira vez, as evidências do conhecimento científico atual sobre estratégias de prevenção primária para comportamentos suicidas em população adulta foram agrupadas em um único trabalho, utilizando diretrizes rigorosas de qualidade metodológica. Dos resultados encontrados destaca-se que: (1) as evidências sobre a prevenção primária permanecem incertas para serem implementadas de forma generalizada; (2) grande parte dos estudos sobre prevenção primário do suicídio apresentam lacunas metodológicas graves; (3) estratégias multicomponentes apresentam resultados promissores quando adaptadas conforme as especificidades da população alvo; e (4) reforçamos recomendações anteriores a respeito da efetividade das estratégias de restrição aos meios na população geral. A avaliação qualidade das evidências utilizando diretrizes rigorosas aprimora o conhecimento baseado em evidências sobre os programas preventivos de suicídio a nível populacional.

3.1.3 Limitações

Apesar das importantes contribuições, o Artigo I apresenta algumas limitações, das quais podemos destacar alguns pontos. Inicialmente, por não termos incluído literatura cinzenta em nossa busca de trabalhos, deixando de fora do estudo informações geradas e divulgadas fora dos canais convencionais de publicação científica. Há também o risco inerente de que estudos com resultados significativos tenham maior probabilidade de serem publicados, não sendo possível excluir potenciais vieses de publicação neste sentido. Revisões sistemáticas são comumente afetadas pela qualidade metodológica dos estudos incluídos, dificultando assim a integração dos dados no estudo, especialmente com alta heterogeneidade. É também esperado que em uma revisão de revisões haja uma sobreposição de resultados dos estudos originais. Nós não conduzimos uma análise para avaliar a contribuição de cada estudo original que se sobrepõe, no entanto nós calculamos

que aproximadamente 16% dos mais de 700 artigos apresentaram algum grau de sobreposição, não causando prejuízo importante aos resultados finais. Por fim, para facilitar a análise, nós limitamos os desfechos da revisão a mudanças nos números de suicídios ou comportamentos suicidas. É possível observar, no entanto, que muitas das intervenções de prevenção primária possuem efeitos mais observáveis em desfechos como comportamentos protetivos (como busca de ajuda), conhecimento sobre suicídio, e outros similares. Esses desfechos não foram considerados para a presente análise, pois a busca por artigos não incluiu os termos referentes a eles, uma vez que os termos de busca foram definidos conforme o desfecho estipulado inicialmente no planejamento da revisão.

3.1.4 Conclusão e implicações futuras

Neste estudo foram revisadas 32 revisões sistemáticas acerca de prevenção primária do suicídio. A partir das análises realizadas, pudemos concluir que a única estratégia de prevenção primária que aplicada individualmente apresentou evidência de efetividade para a redução de mortes por suicídio foi restrição de acesso aos meios letais, especialmente quando implementada para meios mais populares, de fácil acesso, e altamente letais. Estratégias que combinam diferentes tipos de intervenção parecem promissoras, especialmente quando desenvolvidas conforme as especificidades da população alvo, no entanto ainda são necessários mais estudos para confirmar os efeitos positivos e quais intervenções realmente estão relacionadas a tais efeitos. É importante também destacar a importância da qualidade da comunicação e promover a adesão dos comunicadores às diretrizes de comunicação responsável sobre suicídio, uma vez que os estudos encontrados indicam efeitos positivos de comunicações responsáveis na prevenção do suicídio.

Uma revisão sistemática mais recente (Mann; Michel; Auerbach, 2023) incluiu 97 ensaios clínicos randomizados e avaliou estratégias de prevenção em todos os níveis de prevenção e encontrou efeitos positivos em diferentes estratégias: (1) treinamento para profissionais da atenção primária para reconhecimento e tratamento de depressão; (2) educação de jovens a respeito de depressão e comportamento suicida (3) busca ativa de pacientes psiquiátricos após alta hospitalar ou crise suicida; (4) tratamentos medicamentosos apresentaram efeitos tanto na diminuição de ideação suicida como de tentativas de suicídio (a depender do medicamento), mas ainda com necessidade de estudos mais robustos; (5) terapia cognitivo-comportamental e terapia dialética-

comportamental; (6) restrição aos meios. A respeito de outras estratégias (treinamento de *gatekeepers*, *screenings* mediados por tecnologia) os autores apontam para a necessidade de mais estudos. Por fim, o *screening* ativo para ideação suicida não demonstrou efeitos melhores do que apenas fazer o *screening* para depressão. Desta forma, o estudo de Mann, Michel e Auerbach (2023) confirma boa parte dos nossos achados anteriores. A maior parte das evidências sobre prevenção de suicídio estão em intervenções como tratamentos e busca ativa após uma crise suicida. Tais estratégias muitas vezes dependem diretamente da expressão suicida, atingindo apenas indivíduos que já estão em risco mais elevado ou que já apresentam comportamentos suicidas. Assim como no nosso estudo, os resultados indicam que é de extrema importância que os planejamentos de planos de prevenção de suicídio incluam restrição aos meios, bem como ações educativas combinadas com a facilitação de acesso a serviços de saúde.

A partir das conclusões do presente estudo propõe-se então que futuros planos de prevenção de suicídio levem em conta as evidências presentes na literatura. Se mostra necessário que a avaliação do efeito dos planos e programas de prevenção do suicídio faça parte do seu desenvolvimento, planejamento e implementação, definindo previamente desfechos claros e mensuráveis. É fundamental que mais estudos explorem os efeitos da combinação de intervenções de prevenção primárias com outros níveis de prevenção, de forma a confirmar os efeitos promissores de estratégias multicomponentes. Sugere-se ainda que avaliações de planos e programas de prevenção de suicídio incluam outros desfechos relacionados ao risco de suicídio e comportamentos protetivos, uma vez que estratégias de prevenção primária podem apresentar um efeito inicial em desfechos como comportamentos de busca de ajuda e conhecimento acerca do tema. Por fim, recomenda-se que estratégias de restrição aos meios sejam testadas e incluídas em planos de prevenção, considerando as especificidades do contexto a ser implementado, bem como promoção da adesão às diretrizes de comunicação responsável por jornalistas e outros profissionais.

3.2 Artigo II

3.2.1 Discussão

O artigo intitulado "*Suicide ideation among Brazilian college students: Relationship with academic factors, mental health, and sexual abuse*" apresentou uma

análise estatística que buscou investigar potenciais fatores de risco para o suicídio relacionados a aspectos da vida acadêmica de estudantes universitários das 27 capitais brasileiras. Esse estudo apresenta uma análise da prevalência de ideação suicida e fatores associados em uma amostra representativa de estudantes universitários brasileiros. A partir de um modelo conceitual hipotetizado previamente, foi realizada uma regressão logística hierárquica para a investigação dos fatores de risco e protetivos, ajustando o modelo para as covariáveis. A construção do modelo conceitual para a execução da regressão logística possibilitou levantar hipóteses a respeito da relação entre as variáveis incluídas no modelo, conforme recomendado na literatura (Victora et al., 1997). Sendo assim, os resultados apresentados no presente estudo servem de embasamento para o desenvolvimento de pesquisas futuras, bem como para o planejamento de políticas de promoção de saúde mental e prevenção do suicídio entre jovens universitários no Brasil.

Dentre os principais resultados encontrados, destaca-se que mais de um terço dos estudantes relataram algum tipo de sofrimento mental e 5,9% apresentaram algum nível de ideação suicida (desde desejo de estar morto até a intenção de matar-se caso tenha a oportunidade). Uma meta-analise mais recente (Demenech et al., 2021) encontrou que a prevalência de comportamentos suicidas entre universitários brasileiros variou de 7,2% a 12,97% em oito estudos diferentes, sendo 9,1% a prevalência agrupada. Dos estudos incluídos na meta-analise, três (Amaral et al., 2008; Paula et al., 2014; Torres et al., 2018) utilizaram o item #9 da Escala Beck de Depressão como variável de desfecho. Entretanto, os três estudos mencionados avaliaram apenas estudantes do curso de medicina. Dos demais estudos citados na meta-analise que investigaram comportamentos suicidas, apenas dois utilizaram amostras de estudantes de cursos variados, no entanto sem a utilização de um instrumento padronizado e restritos a uma universidade (Santos et al., 2017) ou a uma região (Netto et al., 2013), sem informações claras sobre o método de amostragem. As diferenças nas prevalências entre nosso estudo e outros estudos brasileiros pode ser explicada devido a diferenças metodológicas e de tamanho amostral. Demenech et al., (2021) observaram, em sua meta-analise, que estudos com amostras menores em geral apresentavam prevalências maiores do que a prevalência agrupada, enquanto estudos com amostras maiores encontraram prevalências menores.

A comparação dos nossos resultados com outros estudos foi limitada, devido à falta de estudos representativos de amostras brasileiras, sendo que a maior parte dos dados sobre suicídio entre jovens provém de estudos em países ocidentais de alta renda

(O'Connor; Nock, 2014; Mortier et al., 2018b; Naghavi, 2019). Mesmo após buscar uma comparação cautelosa com os resultados existentes na literatura, outro desafio encontrado foi a falta de padronização nos conceitos operacionais e medidas utilizadas referentes à ideação suicida, sendo este um debate já levantado entre estudiosos da suicidologia (Goodfellow; Kõlves; De Leo, 2018; Harmer et al., 2021). Tendo em vista tais limitantes, foi necessário muito cuidado ao fazer comparações de outros estudos com os resultados apresentados no presente trabalho. Na discussão dos resultados buscamos levar em consideração diferenças regionais socioeconômicas, bem como diferenças de metodologia entre estudos.

Para além da prevalência, também encontramos associações importantes de características dos estudantes em relação à presença de ideação suicida. Como esperado, indicadores de sofrimento mental e abuso sexual foram associados a maiores chances de os estudantes apresentarem ideação suicida. Essa relação da presença de ideação suicida com problemas de saúde mental e história de abuso sexual já são bem conhecidas na literatura, especialmente quando consideramos os desafios e adversidades enfrentadas pelos estudantes durante a fase inicial da adultez (Ross; Niebling; Heckert, 1999; Kessler et al., 2005; Hansen; Lang, 2011; Beiter et al., 2015; Mortier et al., 2015; Auerbach et al., 2016; Duffy et al., 2020; Sheldon et al., 2021).

Durante a construção do modelo conceitual hierárquico, utilizado para orientar a análise estatística de regressão logística, hipotetizamos que variáveis acadêmicas poderiam estar relacionadas à presença de ideação suicida. Estudos anteriores apontam para uma relação não apenas com comportamentos e cognições suicidas (Evans; Hawton; Rodham, 2004; Jiang; Perry; Hesser, 2010; Hansen; Lang, 2011; Mortier et al., 2015), mas também com indicadores de sofrimento psíquico (Dyrbye et al., 2010; Taylor et al., 2011; Lyrakos, 2012; Klonsky; Saffer; Bryan, 2018; Duffy et al., 2020; Jeffries; Salzer, 2021), o qual por sua vez está relacionado a desfechos relacionados ao suicídio, como apontado anteriormente. Dos nossos resultados, destaca-se a associação de ideação suicida com insatisfação com o curso, desejo de trancar ou largar o curso e baixo rendimento acadêmico. Um dos desafios encontrados durante a discussão do Artigo II foi encontrar dados de estudos anteriores para discutir tais resultados. Constatamos que há mais estudos sobre adolescentes alunos de ensino médio do que sobre estudantes universitários e buscamos estabelecer uma relação entre tais estudos, uma vez que há dados que apontam que parte dos estudantes universitários já entram na universidade com

uma carga de sofrimento psíquico que corrobora para o aparecimento de comportamentos e cognições suicidas nesta fase (Mortier et al., 2015; Mortier et al., 2018c).

3.2.2 Contribuições

Esse é o primeiro estudo a estimar a prevalência de ideação suicida e fatores associados em amostra representativa de universitários brasileiros. Conforme citado anteriormente, há ainda uma grande lacuna de conhecimento a ser preenchida a respeito da saúde mental e comportamentos e cognições suicidas entre os universitários brasileiros. O presente estudo contribui para o conhecimento atual ao apresentar tal análise em uma amostra representativa dos estudantes brasileiros de áreas urbanas, destacando a necessidade de mais estudos metodologicamente robustos e com amostras probabilísticas e representativas. Dos principais resultados encontrados, destaca-se: (1) a prevalência de ideação suicida entre estudantes universitários brasileiros foi de aproximadamente 6%, e mais de um terço dos estudantes apresentaram indicadores de sofrimento psíquico; (2) há fatores relacionados à vida acadêmica que podem ser associados à presença de ideação suicida, sendo que estes podem auxiliar no desenvolvimento de estratégias de promoção de saúde e prevenção do suicídio nas instituições de ensino superior do Brasil. Por fim, podemos considerar que uma amostra representativa de estudantes brasileiros apresenta resultados potencialmente generalizáveis para países latino-americanos e países de renda média-alta, uma vez que podem compartilhar características sociodemográficas ou estágio de desenvolvimento similar.

3.2.3 Limitações

Apesar das importantes contribuições do presente estudo, algumas limitações devem ser consideradas para a interpretação dos resultados: (1) nossa amostra foi recrutada nas capitais dos estados, restringindo a generalização dos resultados para estudantes de áreas urbanas; (2) o uso de questionários auto administrados é propenso a viés de memória e vieses de informação, apesar disso, o questionário aplicado foi construído com instrumentos confiáveis e validados; (3) o viés de resposta não deve ser excluído, uma vez que os entrevistados podem evitar revelar factos sensíveis, tais como abuso sexual, consumo de drogas e questões relacionadas ao suicídio; (4) o uso de um resultado de item único pode levar a uma superestimação da prevalência (Millner; Lee;

Nock, 2015), no entanto, o tamanho da amostra e a alta taxa de resposta minimizam esse risco; (5) o uso da IS como desfecho não reflete uma medida de risco de suicídio, portanto os resultados do presente estudo não devem ser interpretados como risco para comportamentos suicidas; (6) a utilização de dados secundários limitou nossa codificação das variáveis coletadas, portanto possíveis fatores de confusão podem ter sido negligenciados; (7) como os dados foram coletados em 2009, algumas características dos estudantes universitários mudaram ao longo da última década, indicando a necessidade de estudos atualizados com amostras representativas sobre este assunto; (8) devido às múltiplas comparações em nosso estudo, métodos de correção foram recomendados para evitar o erro tipo I, no entanto tais correções podem excluir variáveis relevantes (aumentando o erro tipo II) ou comprometer o ajuste do modelo a níveis críticos. Tendo em vista que podem surgir falsos positivos, apresentamos o modelo sem correção para comparações múltiplas, com interpretação criteriosa dos valores e limites do IC95%. (9) Por fim, o desenho transversal não permite inferência de causalidade sobre fatores de risco e proteção para IS. Apesar dessas limitações, nossas análises foram conduzidas de forma a minimizar seus impactos, e nossos achados nos permitiram retratar as cognições suicidas entre estudantes universitários brasileiros e sua relação com fatores acadêmicos.

3.2.4 Conclusão e implicações futuras

Neste estudo estimamos que a prevalência de ideação suicida entre os estudantes universitários brasileiros é de 5,9%. A partir das análises realizadas, sofrimento mental, histórico de abuso sexual e fatores acadêmicos estiveram associados a maiores chances de presença de ideação suicida. Durante a fase de transição da adolescência para a adultez, os jovens adultos se deparam com uma série de desafios inerentes a este momento da vida, sendo demandados a tomar para si mais responsabilidades e autonomia. Além desta adaptação a novas vivências consigo e com a sociedade, os estudantes universitários enfrentam rotinas acadêmicas intensas. Os principais resultados apresentados no Artigo II indicam que, para além dos fatores de risco conhecidos para a população geral, estudantes universitários apresentam fatores de risco próprios da fase do desenvolvimento e vida acadêmica. Tais dados podem auxiliar na identificação precoce de estudantes em maior vulnerabilidade para ideação suicida.

Estudantes com baixo rendimento acadêmico, que manifestem insatisfação ou desejo de largar/trancar o curso podem ser considerados como um grupo de maior

vulnerabilidade para ideação suicida. Esses indicadores precisam ser colocados no radar da comunidade universitária - professores, educadores, pessoal administrativo, estudantes e gestores. A relação entre aspectos da vida acadêmica com questões desenvolvimentais e de saúde mental necessitam da atenção dos agentes responsáveis pelo desenvolvimento de políticas dentro das universidades. Gestores dos institutos de ensino superior precisam estar atentos para a identificação das vulnerabilidades sócio acadêmicas de seus estudantes. Recomenda-se o desenvolvimento de estratégias de identificação precoce, prevenção e promoção de saúde para grupos com fragilidades sociais, expostos a vulnerabilidades pessoais e contextuais, promovendo também acesso a serviços de saúde mental e suporte psicopedagógico. Tais esforços podem auxiliar na prevenção da progressão de cognições suicidas para comportamentos que ameacem a vida dos estudantes.

3.3 Artigo III

3.3.1 Discussão

O artigo intitulado "*Suicide among college students: much ado about nothing?*" apresenta uma reflexão sobre campanhas de conscientização, mais especificamente a campanha de "Setembro Amarelo" e qual o seu efeito na população jovem. O artigo surgiu após nos deparamos com os resultados encontrados no Estudo I (Artigo I) e no Estudo II (Artigo II). Tendo em mente a importância do papel da comunicação na prevenção do suicídio, bem como as prevalências de sofrimento mental e ideação suicida na população, somados ao fato de haver um aumento nos números de mortes por suicídio no Brasil, nos últimos anos, nesta faixa-etária. Diante da até então falta de estudos sobre os efeitos da campanha "Setembro Amarelo" no Brasil, propomos uma reflexão sobre tal campanha e se ela de fato tem sido bem-sucedida em seu propósito.

Estudos recentes (Cruz et al., 2023; Damiano et al., 2023) apresentaram resultados de análises sobre o efeito das campanhas sob a proposta do "Setembro Amarelo" no Brasil. Os principais resultados dos estudos citados sinalizam o aumento das taxas de suicídio no Brasil nos últimos anos, mesmo após o início oficial da campanha "Setembro Amarelo". Nas discussões dos autores acerca dos resultados encontrados, é reforçada a necessidade de mais estudos que avaliem os efeitos de campanhas de conscientização focadas apenas em comunicações midiáticas, inclusive possíveis efeitos indesejados. Os

autores reforçam ainda, em concordância com as reflexões que levantamos no Artigo III, que o desenvolvimento de planos de prevenção de suicídio no Brasil é imperativo, devendo incorporar ações multisetoriais, incluindo treinamento de profissionais e expansão da rede de cuidados.

3.3.2 Contribuições

A carta apresentada no Artigo III do presente trabalho contribui para o desenvolvimento de evidências em suicidologia levantando uma importante reflexão sobre os efeitos das campanhas de conscientização e demais comunicações midiáticas na prevenção do suicídio entre jovens. Na reflexão proposta são apontadas importantes lacunas do conhecimento que devem urgentemente serem inseridas como focos em pesquisas na área de suicidologia.

3.3.3 Limitações

Apesar de apresentar uma importante reflexão sobre um tema essencial na prevenção de suicídio, o trabalho apresentado no Artigo III consiste em uma carta aos editores e não pode ser utilizada como evidência científica. Seu propósito é apontar lacunas de conhecimento que devem ser foco de atenção de futuros trabalhos.

3.3.4 Conclusão e implicações futuras

Da discussão levantada no Artigo III, somada aos resultados de estudos recentes sobre as campanhas de Setembro Amarelo no Brasil, podemos concluir que ainda há um espaço importante a ser preenchido no conhecimento acerca dos efeitos destas campanhas. Reforçamos assim a necessidade de desenvolvimento de políticas públicas baseadas em evidências para prevenção do suicídio, bem como a inclusão de planos de avaliação dos efeitos de tais políticas sobre desfechos definidos previamente. Destaca-se também a necessidade de mais estudos a respeito dos efeitos de tais intervenções na população brasileira - tanto na população geral como em seus estratos - e da qualidade das comunicações utilizadas em tais campanhas, tendo em mente que comunicações de qualidade estão associadas à redução de taxas de suicídio em outros países. Tais informações são de grande necessidade para subsidiar futuras decisões a respeito da campanha.

4 REFLEXÕES FINAIS

A promoção de saúde mental e prevenção de suicídio entre jovens e estudantes universitários brasileiros é um tema de grande relevância que merece atenção de atores de diferentes setores da nossa sociedade. Para uma efetiva redução das cognições e comportamentos suicidas nesta população é necessário identificar os fatores de risco e de proteção, bem como subgrupos de maior vulnerabilidade para tais desfechos. Considerando os resultados encontrados, há necessidade no país de estudos com metodologias mais robustas, cujos tamanhos amostrais e métodos permitam comparar os estudos e generalizar os resultados

Além das implicações para estudos futuros que visem a investigação deste tema, os achados do presente trabalho também apresentam impactos no desenvolvimento e implementação de políticas públicas e institucionais para a promoção de saúde mental e prevenção do suicídio entre estudantes de ensino superior no Brasil. Gestores das instituições de ensino superior devem prestar especial atenção aos seus estudantes, buscando identificar as vulnerabilidades de seus estudantes considerando as especificidades culturais, sociais, institucionais de cada localidade. Dado que estratégias multicomponentes parecem promissoras quando desenvolvidas de acordo com as características da população que receberá a intervenção, um diagnóstico situacional deve ser considerado como primeiro passo no desenvolvimento de uma política institucional verdadeiramente eficaz. Tal análise situacional permite identificar problemas e necessidades da população-alvo por meio de indicadores pré-definidos, orientando assim a política institucional às questões mais relevantes para essa população.

Após a identificação das especificidades e necessidades dos estudantes, sugere-se que as políticas institucionais incluam diferentes tipos e níveis de intervenção, a fim de potencializar o efeito preventivo destas ações. Destaca-se ainda a importância da inclusão de estratégias de restrição de acesso a meios letais - especialmente entre estudantes que estejam mais expostos a medicamentos e instrumentos durante períodos de atividades práticas em seus cursos de formação. Além disso, deve ter atenção às comunicações realizadas acerca do tema, considerando que a população jovem é especialmente vulnerável para os efeitos de mídias digitais e outros meios de comunicação - formais e informais.

Ainda, considerando os potenciais efeitos positivos em comportamentos protetivos de estratégias como treinamento de gatekeepers, as instituições de nível superior poderiam investir em treinamentos para professores e demais atores da comunidade universitária que possam acompanhar e monitorar os estudantes, possibilitando a identificação precoce daqueles em situações de vulnerabilidade e o devido encaminhamento para serviços de apoio – um exemplo deste tipo de acompanhamento são programas de tutoria já implementados em algumas faculdades de instituições de ensino superior. Nesse sentido, nota-se que estudantes com baixo rendimento acadêmico, que manifestem insatisfação ou desejo de largar/trancar o curso podem ser considerados como um grupo de maior vulnerabilidade para ideação suicida, dentre outras características específicas dos estudantes dentro de cada instituição.

Por fim, é necessário que o planejamento das políticas públicas e institucionais para promoção de saúde e prevenção de suicídio incluam um plano prévio para avaliação do efeito dos programas a serem implementados, definindo previamente desfechos claros e mensuráveis. Apenas assim será possível avaliar quais estratégias de fato possuem um efeito positivo na saúde mental dos estudantes e na prevenção de cognições e comportamentos suicidas desta população. Desta forma, tais esforços poderão não apenas auxiliar na prevenção da progressão de cognições suicidas para comportamentos que ameacem a vida dos estudantes, mas também subsidiar ações futuras nas demais instituições de ensino.

Em suma, há diversos caminhos possíveis a serem trilhados para melhorar a saúde mental dos estudantes universitários brasileiros, buscando a redução das cognições e comportamentos suicidas nessa população. É imprescindível que ações coordenadas e organizadas sejam empreendidas por diversos atores da sociedade, tais como pesquisadores, gestores, a comunidade universitária, profissionais de saúde e educação, entre outros. Apesar dos desafios a serem superados, é por meio de uma compreensão aprofundada do fenômeno, da colaboração intersetorial e da avaliação rigorosa das ações realizadas que será possível alcançar os objetivos almejados.

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World Health Organization [WHO]. Suicide worldwide in 2019. World Health Organization, Geneva. 2021. [citado em 05 jan 2023]. Disponível em: https://www.who.int/publications/i/item/9789240026643

World Health Organization [WHO]. Preventing suicide: a resource for media professionals, 2023 update. World Health Organization. 2023. [citado em 22 fev 2024]. Disponível em: https://www.who.int/publications-detail-redirect/9789240076846.

Yip PSF. Towards Evidence-Based Suicide Prevention Programs. Crisis: The Journal of Crisis Intervention and Suicide Prevention. 2011. 32(3), 117–120. https://doi.org/10.1027/0227-5910/a000100

Zalsman G, et al. Suicide prevention strategies revisited: 10-year systematic review. The Lancet Psychiatry. 2016. 3(7), 646–659. https://doi.org/10.1016/s2215-0366(16)30030-x

6 ANEXOS

5.1 Anexo A: Carta de anuência para uso de banco de dados

DEPARTAMENTO & INSTITUTO DE PSIQUIATRIA

FACULDADE DE MEDICINA – UNIVERSIDADE DE SÃO PAULO

GREA – Programa do Grupo Interdisciplinar de Estudos de Álcool e Drogas

DECLARAÇÃO DE ANUÊNCIA

Declaro que autorizo o projeto “Fatores de Proteção e Risco para Ideação Suicida Entre Universitários Brasileiros” a utilizar o banco de dados do “I Levantamento nacional sobre o uso de álcool, tabaco e outras drogas” como base para suas análises.

Declaro ainda ter conhecimento que o projeto terá o Wang Yuan Pang como o pesquisador responsável e aluna de mestrado Camila Siebert Altavini como a pesquisadora executante.

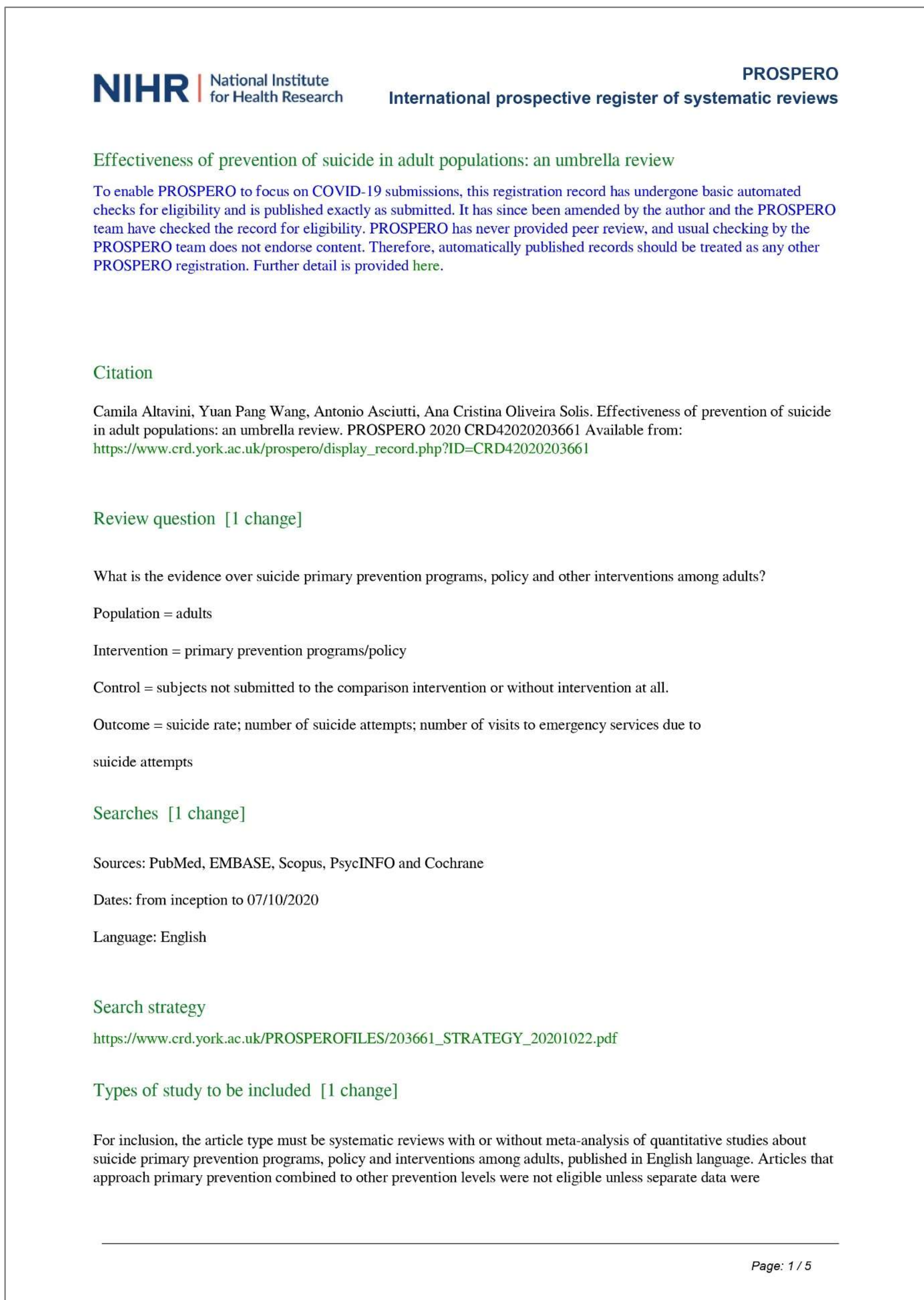
São Paulo, 15 de outubro de 2020

Prof. Dr. Arthur Guerra de Andrade

CRM 33.807

IPq-HC-FMUSP

5.2 Anexo B: Registro de Revisão Sistemática na plataforma PROSPERO



NIHR | National Institute for Health Research

PROSPERO
International prospective register of systematic reviews

Effectiveness of prevention of suicide in adult populations: an umbrella review

To enable PROSPERO to focus on COVID-19 submissions, this registration record has undergone basic automated checks for eligibility and is published exactly as submitted. It has since been amended by the author and the PROSPERO team have checked the record for eligibility. PROSPERO has never provided peer review, and usual checking by the PROSPERO team does not endorse content. Therefore, automatically published records should be treated as any other PROSPERO registration. Further detail is provided here.

Citation

Camila Altavini, Yuan Pang Wang, Antonio Asciutti, Ana Cristina Oliveira Solis. Effectiveness of prevention of suicide in adult populations: an umbrella review. PROSPERO 2020 CRD42020203661 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020203661

Review question [1 change]

What is the evidence over suicide primary prevention programs, policy and other interventions among adults?

Population = adults

Intervention = primary prevention programs/policy

Control = subjects not submitted to the comparison intervention or without intervention at all.

Outcome = suicide rate; number of suicide attempts; number of visits to emergency services due to

suicide attempts

Searches [1 change]

Sources: PubMed, EMBASE, Scopus, PsycINFO and Cochrane

Dates: from inception to 07/10/2020

Language: English

Search strategy

https://www.crd.york.ac.uk/PROSPEROFILES/203661_STRATEGY_20201022.pdf

Types of study to be included [1 change]

For inclusion, the article type must be systematic reviews with or without meta-analysis of quantitative studies about suicide primary prevention programs, policy and interventions among adults, published in English language. Articles that approach primary prevention combined to other prevention levels were not eligible unless separate data were

comprehensively presented. It was not included systematic reviews of studies about suicide prevention on the secondary or tertiary levels, or prevention for nonsuicidal self-injury. Primary data of observational studies, case reports, comments, practice guidelines and editorials on therapeutic modalities were also excluded from this overview. Those articles wherein participants encompassed a mixed sample of adults and children were not eligible unless separate data were comprehensively presented.

Condition or domain being studied

Suicide attempts, behaviors and thoughts among adults.

Participants/population

Inclusion: adults

Exclusion: children, adolescents and elderly people; medical patients (clinical and psychiatric)

Intervention(s), exposure(s)

Suicide prevention programs, policy, communication campaign, hotlines, and other types of intervention for suicide prevention among adults.

Comparator(s)/control [1 change]

Subjects not submitted to the program/policy/intervention or without intervention at all.

Main outcome(s)

We will search for articles that present as primary outcome the reduction on suicide thoughts and behaviors, reduction on suicide rate or visit to emergency services by suicide attempts.

Measures of effect

The outcomes may be measured by specific scales for suicide risk assessment, inventory and scales for suicide ideation assessment, suicide rates, number of visits to emergency services by suicide attempt.

Additional outcome(s)

Not applicable

Measures of effect

Not applicable

Data extraction (selection and coding)

The retrieved articles will be displayed in the Rayyan QCRI platform and filtered in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines. Duplicate studies will be excluded, and we will screen the Title and Abstract of each article using keywords to decide if the SR will be included in the study. Two authors will decide the final list of selected articles and any disagreement will be reconciled during discussion meetings.

To extract data from the selected articles, we will use the JBI Data Extraction Form for Review for Systematic Reviews and Research Syntheses (Aromataris E, Fernandez R, Godfrey C, Holly C, Khalil H, Tungpunkom P. Chapter 10: Umbrella Reviews. In: Aromataris E, Munn Z (Editors). JBI Manual for Evidence Synthesis. JBI, 2020. Available

from https://synthesismanual.jbi.global . https://doi.org/10.46658/JBIMES-20-11).

Risk of bias (quality) assessment

The quality of the retained review articles will be assessed in accordance with AMSTAR version 2 (Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, Moher D, Tugwell P, Welch V, Kristjansson E, Henry DA. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017 Sep 21;358:j4008.).

The assessment of the risk of bias will be supplemented with the Risk Of Bias In Systematic Review (ROBIS) guidelines. (Whiting P, Savovi J, Higgins JP, Caldwell DM, Reeves BC, Shea B, et al. ROBIS: A new tool to assess risk of bias in systematic reviews was developed. J Clin Epidemiol. 2016;69:225-34. https://doi.org/10.1016/ j.jclinepi.2015.06.005)

Strategy for data synthesis

A descriptive summary and explanation of the characteristics and findings of the all included studies will be displayed in a comprehensive table to examine similarities and differences in study design (sample size, methods, intervention, control groups, etc.), population specific characteristics, participants demographic characteristics, outcome measures, conclusions and potential bias across the included studies.

If there are an adequate number of studies with sufficiently homogeneous data, a meta-analysis will be conducted using fix effect model. If it is defined that there is a high level of heterogeneity, we will use a random effect model. If possible to run a meta-analysis, the robustness of the results will be reported considering the following steps: mean weighting and calculating standardized mean difference will be taken to allow synthesis of data and heterogeneity analysis, and sensitivity analysis.

Analysis of subgroups or subsets

If possible, we will utilize meta-regression to analyze if demographic characteristics (such as sex, age or work activity) influences the outcome.

Contact details for further information

Camila Altavini

camila.saltavini@gmail.com

Organisational affiliation of the review

Department of Psychiatry at the Medical School - University of São Paulo

http://ipqhc.org.br/

Review team members and their organisational affiliations [2 changes]

Ms Camila Altavini. Departamento de Psiquiatria da Faculdade de Medicina - Universidade de São Paulo

Dr Yuan Pang Wang. Departamento de Psiquiatria da Faculdade de Medicina - Universidade de Sao Paulo

Mr Antonio Asciutti. Hospital das Clínicas - Faculdade de Medicina - Universidade de São Paulo

Dr Ana Cristina Oliveira Solis. Departamento de Psiquiatria da Faculdade de Medicina - Universidade de Sao Paulo

Type and method of review

Review of reviews, Systematic review

Anticipated or actual start date

07 August 2020

Anticipated completion date [1 change]

20 September 2021

Funding sources/sponsors

None

Conflicts of interest

Language

English

Country

Brazil

Stage of review [1 change]

Review Completed published

Details of final report/publication(s) or preprints if available [1 change]

Altavini CS, Asciutti APR, Solis ACO, Wang Y-P. Revisiting evidence of primary prevention of suicide among adult populations: A systematic overview. Journal of Affective Disorders. Journal of Affective Disorders; 2022;297:641–56.

https://www.ScienceDirect.com/science/article/abs/pii/S0165032721011617?via%3Dihub

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Adult; Humans; Risk Factors; Suicide

Date of registration in PROSPERO

24 September 2020

Date of first submission

24 August 2020

Stage of review at time of this submission [2 changes]

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	Yes
Data extraction	Yes	Yes
Risk of bias (quality) assessment	Yes	Yes
Data analysis	Yes	Yes

Revision note

Updates from the published Systematic review.

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

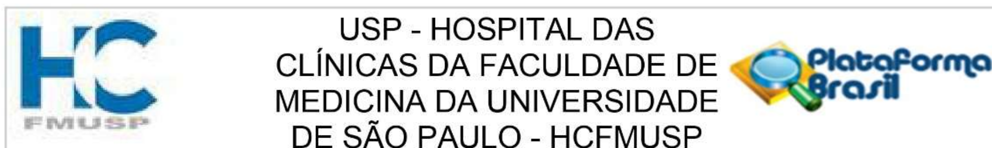
Versions

24 September 2020

14 September 2021

16 May 2022

5.3 Anexo C: Parecer consubstanciado do CEP



PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: Prevalência de Ideação Suicida e Fatores Associados Entre Universitários Brasileiros

Pesquisador: Wang Yuan Pang
Área Temática:
Versão: 1
CAAE: 45816621.8.0000.0068
Instituição Proponente: Hospital das Clínicas da Faculdade de Medicina da USP
Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

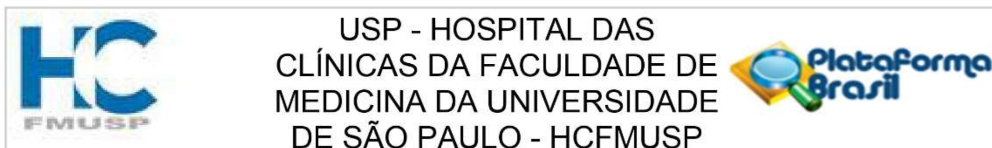
Número do Parecer: 4.711.369

Apresentação do Projeto:
Este projeto propõe estudar a contribuição dos fatores de proteção e de risco para ideação suicida na população universitária. Os dados utilizados neste estudo são originários do I Levantamento Nacional Sobre O Uso de Álcool, Tabaco e Outras Drogas Entre Universitários das 27 Capitais Brasileiras. A análise estatística utilizará modelos de regressão bivariada e multivariada.

Objetivo da Pesquisa:
Geral:
- Identificar a prevalência de ideação suicida em universitários e fatores associados

Específicos:
- Estimar a prevalência de comportamento suicida entre na população universitária estudada;
- Investigar a influência dos fatores de risco e proteção para comportamento suicida entre a população universitária estudada e na literatura;
- Estudar a associação entre fatores de proteção e risco para comportamento suicida e:
- características desenvolvimentais da população universitária, de acordo com a literatura;
- variáveis sociodemográficas da população universitária estudada;
- estilo de vida da população universitária estudada;
- Estudar a associação entre presença de comportamento suicida e:

Endereço: Rua Ovídio Pires de Campos, 225 5º andar
Bairro: Cerqueira Cesar **CEP:** 05.403-010
UF: SP **Município:** SAO PAULO
Telefone: (11)2661-7585 **Fax:** (11)2661-7585 **E-mail:** cappesq.adm@hc.fm.usp.br



comportamentos de risco da população universitária estudada;
satisfação e desempenho acadêmico da população universitária estudada;
atividades extra-curriculares da população universitária estudada;

Avaliação dos Riscos e Benefícios:
Não há riscos por se tratar de um estudo retrospectivo de análise de dados de um estudo prévio com anuência do pesquisador principal.

Comentários e Considerações sobre a Pesquisa:
O estudo é relevante e trata-se de uma análise de dados da base do estudo "I Levantamento nacional sobre o uso de álcool, tabaco e outras drogas"

Considerações sobre os Termos de apresentação obrigatória:
Foram apresentados todos os termos obrigatórios de modo adequado.

Recomendações:
Aprovado

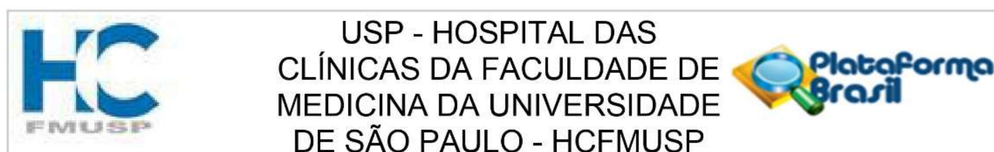
Conclusões ou Pendências e Lista de Inadequações:
Trata-se de um estudo retrospectivo de análise de banco de dados sem risco para os participantes.

Considerações Finais a critério do CEP:
Em conformidade com a Resolução CNS nº 466/12 – cabe ao pesquisador: a) desenvolver o projeto conforme delineado; b) elaborar e apresentar relatórios parciais e final; c)apresentar dados solicitados pelo CEP, a qualquer momento; d) manter em arquivo sob sua guarda, por 5 anos da pesquisa, contendo fichas individuais e todos os demais documentos recomendados pelo CEP; e) encaminhar os resultados para publicação, com os devidos créditos aos pesquisadores associados e ao pessoal técnico participante do projeto; f) justificar perante ao CEP interrupção do projeto ou a não publicação dos resultados.

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1707506.pdf	19/04/2021 14:33:12		Aceito
Folha de Rosto	Fr_Wang_18075.pdf	19/04/2021	Wang Yuan Pang	Aceito

Endereço: Rua Ovídio Pires de Campos, 225 5º andar
Bairro: Cerqueira Cesar **CEP:** 05.403-010
UF: SP **Município:** SAO PAULO
Telefone: (11)2661-7585 **Fax:** (11)2661-7585 **E-mail:** cappesq.adm@hc.fm.usp.br



Folha de Rosto	Fr_Wang_18075.pdf	14:23:56	Wang Yuan Pang	Aceito
Projeto Detalhado / Brochura Investigador	PROJETO_USP_Psiq.docx	23/02/2021 17:13:57	Wang Yuan Pang	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	ISENCAO_TCLE.pdf	23/02/2021 17:12:43	Wang Yuan Pang	Aceito
Outros	aceitacao_cappesq.pdf	23/02/2021 17:09:46	Wang Yuan Pang	Aceito
Declaração de Instituição e Infraestrutura	Anuencia_ArthurGuerra.docx	23/02/2021 17:05:45	Wang Yuan Pang	Aceito
Cronograma	Cronograma.pdf	23/02/2021 17:02:39	Wang Yuan Pang	Aceito

Situação do Parecer:
Aprovado

Necessita Apreciação da CONEP:
Não

SAO PAULO, 14 de Maio de 2021

Assinado por:
ALFREDO JOSE MANSUR
(Coordenador(a))

Endereço: Rua Ovídio Pires de Campos, 225 5º andar
Bairro: Cerqueira Cesar **CEP:** 05.403-010
UF: SP **Município:** SAO PAULO
Telefone: (11)2661-7585 **Fax:** (11)2661-7585 **E-mail:** cappesq.adm@hc.fm.usp.br

5.4 Anexo D: Aprovação na CAPPEsq do I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras

Andrade, A.G., Duarte, P.C.A.V., Oliveira, L.G.(Orgs.), (2010). I Levantamento Nacional Sobre O Uso de Álcool, Tabaco e Outras Drogas Entre Universitários das 27 Capitais Brasileiras. SENAD, Brasília

APROVAÇÃO

A Comissão de Ética para Análise de Projetos de Pesquisa - CAPPesq da Diretoria Clínica do Hospital das Clínicas e da Faculdade de Medicina da Universidade de São Paulo, em sessão de 06/08/2008, **APROVOU** o Protocolo de Pesquisa nº **0378/08**, intitulado: "**I LEVANTAMENTO NACIONAL SOBRE O USO DE ÁLCOOL, TABACO E OUTRAS DROGAS ENTRE UNIVERSITÁRIOS DAS 27 CAPITAIS BRASILEIRAS**" apresentado pelo Departamento de **PSIQUIATRIA**, inclusive o Termo de Consentimento Livre e Esclarecido.

Cabe ao pesquisador elaborar e apresentar à CAPPesq, os relatórios parciais e final sobre a pesquisa (Resolução do Conselho Nacional de Saúde nº 196, de 10/10/1996, inciso IX.2, letra "c").

Pesquisador (a) Responsável: **Arthur Guerra de Andrade**

Pesquisador (a) Executante: **Arthur Guerra de Andrade**

CAPPesq, 12 de Agosto de 2008

Prof. Dr. Eduardo Massad
Presidente da Comissão de Ética para Análise de Projetos de Pesquisa

Recebido: 13/08/08, às 11 h
Departamento de Psiquiatria da FMUSP

Comissão de Ética para Análise de Projetos de Pesquisa do HCFMUSP e da FMUSP Diretoria Clínica do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo Rua Ovídio Pires de Campos, 255, 5º andar - CEP 05403 010 - São Paulo – SP Fone: 011 3069 6442 Fax: 011 3069 6492 e-mail: cappesq@hcnet.usp.br / secretariacappesq2@hcnet.usp.br

7 APÊNDICE

6.1 Apêndice 1. Interconsulta no paciente com risco de suicídio

Altavini CS, Coêlho BM, Wang YP. Interconsulta no paciente com Risco Suicida. In: Miguel, E.C.; Lafer, B.; Elkis, H.; Forlenza, O.V. (orgs). Clínica Psiquiátrica. 2a.ed. Barueri: Manole, 2021, v. 2, p. 1147-1160

Versão diagramada antecedente à impressão da versão final.

4

Interconsulta no paciente com risco de suicídio

Camila Siebert Altavini
Bruno Mendoça Coêlho
Yuan-Pang Wang

Sumário

Introdução
Pacientes atendidos em serviços de saúde
Avaliação do risco suicida
Fatores de risco
Como avaliar o risco
Entrevista clínica
Instrumentos psicométricos de avaliação de suicídio
Manejo clínico e tratamento
Perspectiva biológica
Perspectiva psicológica e social
Perspectiva socioambiental
Reações da equipe de de saúde
A família do paciente suicida
Prevenção de suicídio
Planejamento de alta e encaminhamento
Considerações finais

Pontos-chave

- As três principais funções do interconsultor em relação ao comportamento suicida são: identificar o risco, proteger o paciente e tratar os fatores de risco.
- A avaliação do risco de sucídio deve ser um processo, e não um evento isolado.
- Uma boa entrevista clínica fornece informações suficientes para a avaliação de risco, dando oportunidade para estabelecimento de uma relação empática e de exploração dos fatores de risco e de proteção.
- A interconsulta em saúde mental possui como meta ideal não apenas tratar o paciente, mas realizar um diagnóstico situacional, considerando aspectos relacionais, ambientais, psicossociais e da própria doença física do paciente.
- O manejo do paciente com ideação suicida deve ser definido conforme a gravidade da situação.
- A indicação e manejo de tratamento farmacológico devem basear-se em uma avaliação cuidadosa, tendo em vista que o início do tratamento está comumente associado a um risco de novas tentativas.
- Durante o planejamento da alta do paciente, deve-se sempre reavaliar o risco de suicidio para definir os encaminhamentos a serem indicados.

INTRODUÇÃO

Suicídio é um fenômeno complexo e multicausal, permeado por diversas variáveis biopsicossociais que interagem entre si. No Brasil, foram registrados 55.649 óbitos por suicídio entre 2011 e 2015, observando-se uma taxa de mortalidade por suicídio de 5,7/100 mil habitantes[1]. No mundo, as taxas de mortalidade padronizadas por idade para suicídio diminuíram bastante desde 1990[2], mas o suicídio continua contribuindo significativamente para a mortalidade no globo. Contudo, a mortalidade por suicídio é variável entre os locais, os sexos e as faixas etárias. Estima-se que a taxa de suicídio em pacientes internados em hospitais gerais seja de 4 a 5 vezes maior que na população geral[3]. Assim, o suicídio é considerado atualmente um importante problema de saúde pública, no Brasil e no mundo. Estratégias de prevenção ao suicídio devem ser direcionadas a populações vulneráveis de acordo com a variação nas taxas de mortalidade.

Os serviços de saúde constituem os locais que os potenciais pacientes suicidas são abordados frequentemente[4]. Em revisões de literatura, estima-se que entre 44 a 45% das pessoas que cometeram suicídio tiveram algum tipo de contato com um profissional de saúde mental nos 30 dias anteriores ao ato suicida[5-7]. Muitas vezes, as tentativas de suicídio provocam quadros graves de saúde que ameaçam a vida, fazendo-se necessário um atendimento em serviços de emergência. Estudos apontam que é comum que o atendimento a pacientes após tentativas de suicídio se limite aos cuidados físicos e que, mesmo quando há serviço de saúde mental disponível na instituição,

os encaminhamentos a esses profissionais não são realizados de forma rotineira[8]. Além disso, não é incomum o médico clínico e profissionais de saúde em saúde mental se depararem com um paciente internado ou em atendimento ambulatorial que relata ideação suicida, independente de sua doença primária[9].

A alta taxa de cognições e comportamentos suicidas que são observados nos serviços de saúde é preocupante, mas também configura uma oportunidade de intervenção. Para impedir efetivamente um desfecho fatal, a chave para evitar essas mortes desnecessárias é a sua detecção precoce, instituindo medidas de proteção e tratamento adequados após identificar o risco. A equipe multidisciplinar dos serviços de saúde deve indagar rotineiramente sobre a presença de ideação e comportamento associados à morte autoinfligida em diferentes populações. Tanto o interconsultor quanto a equipe de saúde devem estar atentos para os fatores associados à assistência hospitalar (tanto ambientais quanto relacionados ao tratamento) que podem contribuir para o risco aumentado de suicídio.

Os motivos declarados nas solicitações de interconsulta (IC) psiquiátrica são variados. Alguns estudos indicam que os comportamentos suicidas (tentativas, autolesão intencional, entre outros) estão entre as solicitações mais frequentes de IC psiquiátrica[10]. Em um hospital universitário, Sánchez-González et al.[11] observaram que a maior parte dos pacientes atendidos pelo serviço de IC psiquiátrica apresentaram contato prévio com serviços psiquiátricos, sendo que 12% dos pacientes também relataram uma história anterior de tentativa de suicídio. O principal motivo de solicitação de IC foi a depressão (21,3%), seguido por abuso de substâncias (19,6%). Apenas 3,9% dos pedidos de IC solicitaram especificamente para avaliar o risco de suicídio ou nova tentativa de suicídio. Outro estudo, realizado em diversos países europeus, mostra também a depressão como principal motivo de solicitação de IC psiquiátrica (17,7%), dessa vez seguida pelos comportamentos autolesivos intencionais (17%)[10]. Em nosso meio, há dados escassos que estimaram as solicitações de IC nos serviços de saúde.

No Brasil, alguns estudos estimaram que apenas um terço das pessoas que tentam suicídio é atendida em algum serviço de saúde[12]. Estes pacientes são levados ao serviço de emergência principalmente após a ingestão de pesticidas e medicamentos. Menos de um terço deles recebe algum tipo de encaminhamento para tratamento ou *follow-up* após a alta[8]. Em um estudo com pacientes internados em Hospital Universitário por doenças crônicas foi encontrado que 5% dos pacientes apresentavam alto risco de suicídio[13]. A maioria dos pacientes internados (60%) apresentaram algum adoecimento psiquiátrico, sendo que o diagnóstico mais frequente foi de transtorno depressivo maior (29,2%).

Os profissionais de saúde devem estar preparados para identificar e fazer uma avaliação inicial de pacientes com risco suicida. Entretanto, isso nem sempre ocorre. Muitos serviços de saúde relegam unilateralmente esta tarefa aos interconsultores psiquiátricos, desperdiçando a oportunidade de oferecer um atendimento holístico aos pacientes em risco. Quando falamos sobre o serviço de interconsulta (IC) psiquiátrica é possível encontrar na literatura diferentes formas de atuação do interconsultor, sendo classificadas de psiquiatria de consultoria ou psiquiatria de ligação. A primeira refere-se a uma atuação pontual, em que o profissional avalia e indica tratamento para pacientes de outra especialidade. A segunda abrange um leque mais amplo de atuação, mantendo um contato contínuo com os serviços do hospital geral, em que o profissional faz parte da equipe médica e sua avaliação se dá para além dos aspectos clínicos do paciente, mas aborda também aspectos da relação entre este, a equipe assistencial e a instituição[14]. Por vezes, a integração entre os aspectos físicos e emocionais dos pacientes em hospital geral ocorre por meio da disciplina de medicina psicossomática. Tendo em mente a abordagem recomendada de um atendimento biopsicossocial, a implementação de modalidade adequada de IC depende da taxa de procura dos pacientes, o fluxo do serviço, tipo de clínica e questões de custo-efetividade.

Esperamos, com esse capítulo, abordar cada etapa da atuação do interconsultor de psiquiatria frente a um paciente em risco de suicídio, bem como considerações a respeito de manejos possíveis para demais profissionais de saúde. O capítulo está estruturado conforme as etapas da atuação, desde a detecção do risco, passando pela avaliação do nível deste risco, manejos e intervenções possíveis, até a alta. Os achados na literatura ainda possuem algumavariação nas recomendações, buscamos aqui trazer as formas de atuação mais comuns na prática clínca, considerando também estudos robustos e evidências clínicas.

PACIENTES ATENDIDOS EM SERVIÇOS DE SAÚDE

Os serviços de emergência são, muitas vezes, a porta de entrada dos pacientes no sistema de saúde. O próprio paciente ou familiares e pessoas da rede de apoio costumam buscar ajuda após uma tentativa de suicídio que tenha causado danos à integridade física do indivíduo. Apesar de ser uma das principais portas de entrada, não é a única. Não é incomum clínicos de outras especialidades se depararem com ideações suicidas de seus pacientes na atenção primária, ambulatórios e enfermarias.

Nem todos os pacientes recebem um tratamento minimamente adequado em serviços de saúde. Muitos deles são liberados dos serviços médicos após uma tentativa de suicídio sem receber uma completa avaliação psiquiátrica, com recomendações adequadas. Outras vezes, os pacientes são liberados desacompanhados de familiares e/ou amigos. Infelizmente, ainda há uma crença errônea de que tais casos não evoluiriam para suicídio. Este conceito vem sendo revisto nas últimas décadas, havendo evidências claras de que a tentativa prévia constitui um dos principais fatores de risco para suicídio futuro[15].

Quando o paciente chega ao pronto-socorro após uma tentativa de suicídio ou ainda em crise, as primeiras medidas a serem tomadas deverão ter como principais objetivos a segurança e integridade física do paciente, evitando evasão e acesso a meios letais. Sempre que possível é recomendado que o paciente não fique sozinho e esteja ao alcance de visão dos profissionais de saúde. A avaliação de risco e intervenção psiquiátrica

e psicológica normalmente serão realizadas após os cuidados imediatos para estabilizar a saúde física do paciente.

Em atendimentos ambulatoriais ou enfermarias hospitalares, quando o paciente manifesta desejo de morte ou intenção suicida é importante que o profissional de saúde ofereça apoio emocional e realize uma breve avaliação de risco (conforme alguns modelos descritos mais adiante) para quantificar a intensidade da intencionalidade letal do paciente. Mapeado o risco de suicídio do paciente, é possível o encaminhamento ao profissional de saúde mental – no caso de atendimento ambulatorial – ou a solicitação da IC – no caso de internações. A urgência da solicitação deste serviço se dará de acordo com a gravidade e iminência do risco de suicídio apresentado pelo paciente. Caso necessário, o profissional também poderá acionar a rede de apoio do paciente, especialmente no caso de atendimentos ambulatoriais, quando uma alta hospitalar sem uma pessoa responsável pelo paciente está contraindicado.

AVALIAÇÃO DO RISCO SUICIDA

Realizar uma boa avaliação de risco é um processo complexo e coloca uma grande carga de responsabilidade sobre o profissional que a conduz. Por ser um tema permeado de preconceitos e estigmas, nem sempre o paciente está disponível para compartilhar tais informações[16]. Estudos mostram que a maior parte dos pacientes que tentaram suicídio negaram apresentar ideação suicida na sua última comunicação com profissional de saúde[17]. Uma avaliação de risco deve identificar aspectos tratáveis e modificáveis do risco de suicídio, bem como fatores protetivos[18]. A avaliação de risco de suicídio é um processo, não um evento isolado e deve ser realizada sempre que houver alterações importantes no andamento clínico do caso, especialmente antes de uma alta[18,19]. Entre as informações a serem exploradas na avaliação de risco, deve-se então prestar especial atenção aos chamados fatores de risco e de proteção.

Fatores de risco

Quando falamos em fatores associados ao comportamento suicida, é possível destacar alguns atributos e circunstâncias que são os chamados fatores de risco. Tais fatores devem ser considerados no momento da avaliação de risco de suicídio, uma vez que a os mesmos podem estar ligados a um aumento na vulnerabilidade do sujeito para o comportamento suicida. Destaca-se ainda que há uma variação destes fatores quanto a sua natureza, podendo ser relacionados a característica sociodemográfica, fatores psicossociais, transtornos psiquiátricos, cognição/comportamento e outros (conforme Tabela 1). Dentre os fatores de proteção para comportamento suicida já conhecidos na literatura, a OMS[20] vê o papel das relações interpessoais,

Tabela 1 Fatores de risco aumentado para suicídio

Sociodemográficos	Saúde física
Sexo masculino Jovens (15-29 anos) e idosos Solteiros, viúvos e divorciados Grupos minoritários (étnicos, LGBTQ+, religiosos)	Doenças crônicas Dor de difícil manejo Doenças incapacitantes Mudança abrupta de condição de saúde
Psicossociais	**Cognição/afetos e comportamento**
Violência familiar/doméstica Desemprego/aposentadoria Perda importante recente Término de relacionamento recente Isolamento social Situação de vulnerabilidade social Trauma ou Abuso físico / sexual *Bullying* / Discriminação Exposição a situação de desastre, guerra e conflitos Falta de suporte social Mudanças abruptas de condição social	Rigidez cognitiva Estratégias de *coping* desadaptativas Pensamento dicotômico Baixa autoestima Dificuldade em buscar ajuda Impulsividade Ideação ou planejamento suicida Desesperança Sensação de desamparo Desespero Dor psíquica (*psychache)*
Psiquiátricos	**Outros fatores importantes**
Histórico de tentativas de suicídio e autoagressão Transtornos de humor Abuso de substâncias Transtorno de personalidade (principalmente borderline) Esquizofrenia Comorbidade psiquiátrica Histórico familiar de transtorno mental e/ou de suicídio	Acesso a meios letais Falta de adesão a tratamento Relação terapêutica frágil ou instável Efeitos adversos de medicamentos **Fatores Ambientais** Janelas em andares elevados e sem proteção Falta de preparo ou atenção da equipe Banheiros com trancas Aesso a medicações e a instrumentos perfurocortantes

Fontes: Adaptado de WHO, 2014[15]; Bertolote et al., 2010[21]; Botega, 2015[24].

crenças religiosas/espiritualidade, estratégias de *coping* e práticas de qualidade de vida (Quadro 1).

Outra definição importante para os fatores de risco é a diferenciação entre: fatores predisponentes e fatores precipitantes. Os fatores predisponentes ou "distais" são aqueles que possuem um efeito principalmente a longo prazo, eles "criam o terreno" para a ocorrência de comportamentos suicidas. Já os fatores precipitantes ou "proximais", também chamados de "gatilhos", são aqueles que desencadeiam o comportamento suicida[21].

Alguns autores[22] relatam que o comportamento suicida se desenvolve em um *continuum* de forma progressiva, evoluindo como pensamentos de morte → ideação suicida → planejamento → busca por meios letais → providências pós-morte → tentativa. No entanto, nem sempre esta progressão pode ocorrer numa sequência clara, especialmente em casos particulares de alta impulsividade. Há relatos de que o comportamento suicida pode ser vivenciado como algo flutuante, variando entre as etapas descritas ou até mesmo não passando por algumas delas[23]. O avaliador de um paciente suicida deve levar em conta a possibilidade de que o comportamento suicida possa ser flutuante, progredindo num processo dinâmico de risco. Na prática, é importante reavaliar o risco autolesivo do paciente, especialmente antes da alta hospitalar.

Quadro 1 Principais fatores de proteção para suicídio

Principais fatores de proteção
Relações fortes e saudáveis
Religiosidade/espiritualidade
Resiliência/estratégias adaptativas de *coping*
Estabilidade emocional
Capacidade de buscar ajuda
Estilo de vida saudável (exercício físico, alimentação saudável, sono reparador)
Relação terapêutica positiva
Estar empregado
Presença de criança na família
Gravidez
Ausência de transtorno mental

Fonte: adaptado de WHO, 2014[15]; Bertolote et al., 2010[21].

Como avaliar o risco

Antes de partirmos para a avaliação de risco em si, é necessário considerar algumas possibilidades de diagnóstico diferencial, tendo em vista que diferentes pacientes podem apresentar comportamentos autolesivos e tentativas de suicídio. O primeiro diagnóstico diferencial que se deve ter atenção é o comportamento de autoagressão intencional sem ideação suicida. É comum que profissionais com menos experiência e treino em saúde mental possam associar a autoagressão a uma tentativa de suicídio. Entretanto, nem sempre essa relação é verdadeira, sendo necessário avaliar inicialmente a intencionalidade e letalidade do ato. Outras possibilidades que chegam aos serviços de emergência por tentativas repetidas de suicídio são os pacientes com diagnóstico de transtorno de personalidade *borderline*, que muitas vezes precisarão de um manejo e encaminhamento diferenciados dos demais pacientes com risco de suicídio, que geralmente apresentam transtornos depressivos. Botega[24] propõe um auxílio mnemônico para a detecção e avaliação do risco de suicídio, a "regra dos Ds" (Quadro 2), que apresenta os transtornos mentais e estados afetivos comumente associados ao suicídio.

Quadro 2 Transtornos mentais e estados afetivos comumente associados a um maior risco de suicídio

Regra dos D's
Dor psíquica (*psychache*)
Desespero
Desesperança
Desamparo
Depressão
Dependência química
Delírio
Delirium

Fonte: adaptado de Botega, 2015[24].

As três principais funções do psiquiatra, em particular, e de todo o pessoal de saúde, no geral, em relação ao comportamento suicida, são: identificar o risco, proteger o paciente e remover ou tratar os fatores de risco[21]. Independentemente do diagnóstico psiquiátrico, devemos sempre lembrar que o objetivo inicial da equipe de saúde é a proteção à vida do paciente. Muitas vezes são pacientes que depositam uma grande carga emocional na equipe de saúde, que trazem consigo um grande estigma e que estão vulneráveis emocionalmente. A avaliação de risco é, então, de extrema importância na proteção deste paciente e prevenção de atos futuros, além de ser um momento de prestar apoio emocional a este indivíduo que está fragilizado.

Entrevista clínica

Uma boa entrevista fornece informações suficientes para fazer a avaliação inicial de risco, uma vez que ela dá a oportunidade de estabelecer uma relação empática, bem como explorar os fatores de risco e de proteção presentes. Um profissional treinado deve abordar tais pacientes de forma complacente e sem julgamentos, para que surja um vínculo de confiança, obter as informações necessárias para a avaliação de risco e oferecer apoio emocional[21].

Considerando o contexto de atuação do interconsultor, que pode muitas vezes ter o tempo limitado para a realização de uma entrevista adequada, consideramos também a utilização

de instrumentos complementares à entrevista – pois o contexto hospitalar muitas vezes exige intervenções mais breves, para a manutenção de uma rotina de cuidados com o paciente ou até mesmo pela delicadeza do tema e dificuldade de manutenção da privacidade e sigilo nos serviços de emergência ou enfermarias. Dada essa dificuldade, propomos no Quadro 3 algumas sugestões de como realizar uma boa entrevista clínica para a avaliação de risco.

Quadro 3 Breve roteiro de entrevista de avaliação de risco

Objetivos da entrevista
1. Estabelecimento de vínculo – evitar julgamentos, falar de maneira calma e de forma empática. 2. Dar apoio emocional 3. Obter informações para um diagnóstico global. Algumas informações que são importantes: caracterização do ato (método, contexto, intencionalidade) fatores de risco predisponentes e precipitantes aspectos psicodinâmicos (conflitos, motivações, fantasias acerca da morte e morrer) antecedentes pessoais e familiares fatores de proteção (rede de apoio social, planos futuros, qualidade de vida, estratégias de *coping*…) informações clínicas (saúde física)
Como falar sobre suicídio?
Sempre falar de forma cuidadosa, porém aberta e claramente. Fazer perguntas de maneira progressiva de forma a obter as informações necessárias. Exemplos: Você se sente infeliz ou sem esperança? Você sente que sua vida é um fardo? Sente que a vida não vale mais a pena ser vivida? Você tem pensado em morte ultimamente? Você tem pensado em morrer? Tem pensado em acabar com a vida? Você pensa em como faria isso? Tem planos? Você possui (remédios, armas, ou outros meios)? Já pensou em quando fazer isso? É capaz de se proteger e retornar para a próxima consulta? Pode falar mais sobre isso? “É fundamental que as questões não sejam coercitivas, mas sim que sejam feitas de maneira suave, na tentativa de se criar a empatia entre o médico e o paciente”[21]
Estar atento a algumas falas do paciente, como... “Estou cansado de viver” “Gostaria de sumir deste mundo” “Esse tormento não tem fim” “Seria melhor se eu morresse” “Sou um fardo para os outros”

Fonte: adaptado de Bertolote et al., 2010[21]; OMS, 2000[25].

Em relação aos instrumentos estruturados para a avaliação do risco de suicídio, não existe uma escala que apresente um valor preditivo positivo suficientemente bom para substituir a entrevista de avaliação clínica por especialista como padrão ouro para o diagnóstico e gravidade de risco. Muitas ferramentas frequentemente utilizadas têm baixa sensibilidade e especificidade, com falsos-positivos associados a internações psiquiátricas desnecessárias e com algumas avaliações erroneamente classificadas como de baixo risco associadas à ocorrência de suicídio em pacientes que acabam indevidamente recebendo alta da emergência[26]. Na avaliação clínica, é possível identificar as incongruências da entrevista, como por exemplo a existência de planos futuros num paciente que se declara com ideação suicida.

Instrumentos psicométricos de avaliação de suicídio

Apesar de não haver evidências sobre a eficácia de escalas que isoladamente possam predizer o risco de suicídio, estas podem ser usadas de forma a complementar a entrevista clínica, seja para orientar as perguntas da entrevista clínica ou até mesmo para fins pedagógicos para profissionais não especializados em psiquiatria ou médicos em formação. Em nenhum momento esses instrumentos podem substituir a entrevista clínica para avaliação de risco[16,19,27-30]. Roos et al.[30] consideram ainda que ferramentas cognitivas de avaliação de risco se mostram promissoras para predição de comportamentos suicidas, mas também necessitam de mais estudos.

A dificuldade em se obter um instrumento eficaz de predição para suicídio se dá devido aos diversos fatores de risco que interagem entre si para o aumento ou redução de comportamentos suicidas, o que faz com que o risco de suicídio possa ter uma variação considerável em um período de tempo, especialmente após a alta hospitalar e se o paciente não estiver mais em acompanhamento por profissionais de saúde mental. Perde-se o controle das variáveis e a possibilidade de intervenção e prevenção. Algumas das escalas bastante utilizadas na literatura são elencadas na Tabela 2 como ferramentas existentes de avaliação de risco durante uma IC psiquiátrica.

Apesar de haver diversas pesquisas sobre instrumentos variados para avaliação de risco de suicídio, sua utilidade clínica tem limitações. As diretrizes da Associação Psiquiátrica Americana (APA) não recomendam o uso de escalas para estimar risco de suicídio[19]. Tais instrumentos devem servir de complemento à entrevista clínica. Como sugestão, selecionamos alguns instrumentos que possuam evidências psicométricas para a avaliação clínica e sejam amplamente utilizados e recomendados nacional e internacionalmente.

As escalas de autorrelato podem auxiliar no estabelecimento de uma comunicação aberta com o paciente acerca de sentimentos e experiências. Algumas escalas de classificação de risco, como a Escala de Ideação Suicida (BSI) e a Escala de Intenção Suicida (*Suicidal Intent Scale* – SIS) podem ser úteis para uniformizar a cobertura de uma entrevista que investiga a presença de suicídio e comportamentos suicidas[19].

Uma vez que a depressão em si é um dos principais fatores de risco para suicídio, recomenda-se realizar sistematicamente uma avaliação da presença e gravidade de sintomas depressivos[31]. Em termos gerais, as escalas de depressão também contribuem para uma avaliação de risco de suicídio. O popular Inventário Beck de Depressão (BDI-II), validado no Brasil[32], não

apresenta escores para o risco de suicídio. Contudo, os itens 2 e 9 do BDI-II (sobre pessimismo e ideação suicida, respectivamente) são sinalizadores importantes para o risco de suicídio[16]. Outras escalas de depressão amplamente utilizadas internacionalmente são a *Hamilton Depression Rating Scale* (HAM-D) e *Patient Health Questionnaire* (PHQ-9), que assim como a BDI-II, possuem um item dedicado a medir comportamento suicida[19,33].

Outro grupo das escalas que possuem relação com a avaliação de suicídio são a Escala de Desesperança Beck (BHS) e a Escala de Ideação Suicida Beck (BSI)[34]. Há também instrumentos projetados especificamente para avaliação de risco de suicídio ou comportamentos autolesivos, que muitas vezes avaliam intencionalidade e/ou letalidade, como a *Columbia-Suicide Severity Rating Scale*[35], *Manchester Self-Harm Rule*[36], *ReAct Self-Harm Rule*[37], *Suicide Assessment Scale*[38], entre outras. No entanto, ainda faltam estudos de tradução e validação para o uso com a população brasileira. Segundo Roos et al.[30], as escalas propostas por Aaron T. Beck[39] constituem as ferramentas mais estudadas e com mais evidências de utilidade na avaliação de suicídio.

MANEJO CLÍNICO E TRATAMENTO

A IC psiquiátrica ou psicológica possui como meta ideal não apenas tratar o paciente, mas realizar um diagnóstico situacional, levando em consideração a relação médico-paciente, aspectos ambientais, psicossociais e da própria doença física do paciente em questão. sendo assim, "a equipe de IC deve estar atenta para sua tarefa assistencial, pedagógica e de pesquisa"[14].

O interconsultor deve tomar decisões a respeito do manejo clínico deste paciente após a avaliação do paciente com risco de suicídio. A abordagem do paciente deve ser realizada de forma a dar suporte emocional e estabelecer vínculo com o mesmo. O manejo do paciente com ideação suicida deve ser definido de acordo com a gravidade da situação para que se possa então proteger o paciente, eliminar ou minimizar os fatores de risco e definir ações de curto, médio ou longo prazo[21].

Não há uma modalidade terapêutica única que possa adequar completamente às necessidades de um indivíduo potencialmente suicida. É importante que o manejo clínico seja realizado com o envolvimento de outros atores. É aconselhável, muitas vezes, envolver a família ou a rede de apoio social que o indivíduo possuir, bem como os demais profissionais envolvidos nos cuidados do pacinte – médicos, enfermeiros, fisioterpeutas, etc. e demais profissionais de saúde mental[21,29,44]. Estas informações devem ser consideradas durante a avaliação de risco de suicídio.

No Quadro 4 há diretrizes sobre a indicação de tratamento dos pacientes com risco suicida. O elemento principal das condutas envolve a gravidade das cognições e o comportamento suicida, para definir as condições favoráveis de tratamento em ambiente ambulatorial. Em casos agudos e graves, deve ser indicada uma internação psiquiátrica. Como as cognições e comportamentos suicidas constituem um fenômeno multidimensional, com a participação de componentes biológicos,

Tabela 2 Instrumentos sugeridos para avaliação de risco

Instrumento	Descrição
Inventário Beck de Depressão (BDI-II)*	Consiste em 21 afirmações sobre a presença dos sintomas depressivos dos últimos 15 dias, os quais são classificados em uma escala ordinal de 0 a 3. Amplamente utilizada na clínica, validada e traduzida no Brasil[32]. Avalia a gravidade da depressão e os itens 02 (pessimismo) e 09 (ideação suicida) auxiliam na avaliação de risco de suicídio.
Escala de Desesperança Beck (BHS)*	Instrumento de autorrelato. Composta por 20 afirmações de verdadeiro ou falso que avaliam crenças negativas e positivas sobre o futuro na última semana. Há tradução para população brasileira[34].
Escala de Ideação Suicida Beck (BSI)*	Escala de 19 itens, projetada para quantificar a intensidade da ideação suicida em adultos. Existem estudos de versões modificadas para usos específicos. Há tradução para população brasileira[34]. As respostas podem ser usadas como um direcionamento para uma investigação mais detalhada[16].
*Suicidal Intent Scale**	Escala de 20 itens para quantificar as percepções e comportamentos verbais e não verbais de um paciente antes e durante uma recente tentativa de suicídio[39]. Nos estudos, o instrumento não foi capaz de distinguir entre aqueles que tentaram suicídio e aqueles que abortaram suas tentativas de suicídio, e nem prever a morte por suicídio. Não possui tradução para a população brasileira.
Suicide Behavior Questionnaire (SBQ)*	Instrumento de autorrelato para avaliação de ideação suicida, correlaciona-se bem com o BDI. Versão original consiste de 04 itens, leva menos de 05 minutos para aplicação. Há uma versão de 14 itens que inclui itens de ideação, tentativas futuras, ameaças anteriores, e possibilidade de morrer por suicídio no futuro[40].
*The Reasons for Living Inventory**, §, ¤	Instrumento de autorrelato. Aproximadamente 10 minutos de aplicação. Composto de 48 itens do tipo Likert. Avalia crenças e expectativas que protegeriam o indivíduo de agir por ideias suicidas[41]. É capaz de diferenciar sujeitos em risco de tentativas de suicídio daqueles que apresentam apenas ideação. Pode ajudar o paciente a identificar forças pessoais e razões para viver[16].
SAD PERSONS *scale* §, ¤	Escala projetada com base em dez principais fatores de risco para suicídio, propõe avaliar a possibilidade de tentativa de suicídio. Indicada para uso educacional para avaliação de risco de suicídio[42].

* Instrumento listado nas diretrizes da Associação Psiquiátrica Americana, 2010[19].
§ Instrumento recomendado por Bech & Awata, 2009[33].
¤ Instrumento sugerido pela Registered Nurses Association of Ontario (RNAO), 200843.

Quadro 4 Diretrizes gerais para indicar o tratamento em pacientes com risco de suicídio ou comportamento suicida

Indicação geral de hospitalização, depois de uma tentativa de suicídio ou tentativa frustra
▪ Paciente psicótico ▪ Tentativa violenta, quase letal, ou premeditada. ▪ Precauções foram feitas para dificultar o resgate ou descobrimento ▪ Persistência do plano ou a clara presença de intenção ▪ Paciente com remorso de estar vivo ou sem remorso de ter tentado suicídio ▪ Paciente do sexo masculino, + 45 anos, com doença psiquiátrica de início recente, com pensamentos suicidas ▪ Paciente com limitação do convivio familiar, suporte social precário, incluindo perda da condição socioeconômica ▪ Comportamento impulsivo persistente, agitação grave, pouca critica, ou recusa evidente de ajuda ▪ Paciente com mudança do estado mental devido a alteração metabólica, tóxica, infecciosa ou outra etiologia que necessita a pesquisa da causa clínica. Na presença de ideação suicida com ▪ Plano específico de alta letalidade ▪ Alta intencionalidade suicida
Indicação de hospitalização, às vezes necessária, depois de uma tentativa de suicídio ou tentativa frustra, exceto as circunstâncias acima indicadas
▪ Na presença de ideação suicida ▪ Quadro psicótico ▪ Transtorno psiquiátrico maior ▪ Tentativas anteriores de suicídio, particularmente com serias repercussões clínicas. ▪ Problemas clínicos preexistentes (transtorno neurológico, câncer, infecção, etc.) ▪ Falta de critica ou incapacidade para colaborar com a estrutura hospitalar, ou impossibilidade de acompanhar um tratamento ambulatorial ▪ Necessidade de ajuda de uma equipe para medicar ou realizar eletroconvulsoterapia ▪ Necessidade de observação constante, testes clínicos ou rastrear diagnósticos que necessitam de estrutura hospitalar ▪ Suporte familiar e social limitado, incluindo condição social precária ▪ Falta de uma boa relação médico-paciente que impossibilite do acompanhamento ambulatorial Na ausência da tentativa de suicídio ou do relato da ideação suicida ▪ Planejamento e intenção de suicídio evidente pela evolução psiquiátrica do quadro e ou historias prévias que sugerem alto risco de suicídio, e um aumento recente dos fatores de risco para suicídio
Alta do serviço de emergência para ambulatório
Depois de uma tentativa de suicídio ou a presença de ideação suicida ▪ O evento evolvendo o suicídio foi uma reação a eventos precipitantes (exemplo: fracasso em uma prova, dificuldades em relacionamentos), particularmente se a visão do paciente frente a sua dificuldade tenha mudado após sua vinda ao serviço de emergência. ▪ Plano, método e intenção com baixa letalidade ▪ Paciente com suporte familiar e psicossocial estáveis ▪ Paciente é capaz de colaborar com recomendações para o acompanhamento ambulatorial, mantendo contato com seu médico, apresentado condições para um tratamento continuo ambulatorial
Tratamento ambulatorial
▪ Paciente com uma ideação suicida crônica e /ou autolesão sem repercussão clínica grave, apresentando suporte familiar e psicossocial estáveis, ou acompanhamento psiquiátrico ambulatorial já em andamento.

Fonte: Practice guideline for the assessment and treatment of patients with suicidal behavior, 2003[45].

psicológicos e socioambientais, uma abordagem personalizada de tratamento deve levar em conta todas estas perspectivas.

Perspectiva biológica

Os transtornos mentais constituem o principal fator tratável dos pacientes com suicídio. O interconsultor deve estabelecer o diagnóstico psiquiátrico do paciente, levando-se em conta os traços de impulsividade e o potencial iminente de suicídio. Com relação à medicação psiquiátrica, evidências sugerem que o tratamento em longo prazo com carbonato de lítio reduz os comportamentos de autolesão não fatais e fatais em pacientes bipolares, transtorno esquizoafetivo e depressão recorrente, mostrando um efeito antissuicídio específico ao lado da eficácia profilática. O mesmo ocorre no tratamento com clozapina o qual reduz significativamente o comportamento suicida em pacientes esquizofrênicos ou com transtorno esquizoafetivo, por melhorar a desesperança e a depressão nestes pacientes.

Controvérsias ainda existem em relação aos efeitos dos antidepressivos sobre os comportamentos suicidas. Evidências indicam que o aumento do uso de antidepressivos inibidores seletivos da recaptação da serotonina (ISRS) tem reduzido a taxa de suicídio em alguns países[46]. Adicionalmente, como a associação entre depressão e comportamento suicida tem uma grande importância populacional, isso indica fortemente a necessidade de tratamento adequado dessa população com risco de fatal. Os ISRS poderiam reduzir a predisposição traço-dependente aos comportamentos suicidas. A indicação precisa e o manejo correto da medicação dependem de uma avaliação cuidadosa, pois, muitas vezes, o início do tratamento de um paciente com ideação suicida está associado com um risco considerável de novas tentativas. Por exemplo, o paciente pode utilizar a medicação prescrita como método para suicídio ou tentar novamente o suicídio por apresentar uma melhora parcial da depressão, porém com persistência da ideação suicida. Vários estudos de prescrição que examinaram os testes toxicológicos *post mortem* de indivíduos que cometeram suicídio mostraram que menos de 20% deles estavam sendo tratados com antidepressivos na época em que o ato de autoeliminação ocorreu[47]. Esses dados sugerem que essa população recebia tratamento inadequado ou ineficiente. Similarmente, entre 812 pacientes suecos que cometeram atos deliberados de autolesão não fatal, 615 deles (76%) optaram pelo método de autoenvenenamento com drogas[48]. Nestes casos, as drogas antidepressivas foram encontradas em apenas 29 dos 812 pacientes suicidas (3,6%). Uma vez que as drogas utilizadas para envenenamento refletem a sua disponibilidade para o paciente, esses achados sugerem que o subtratamento de depressão é frequente entre os pacientes que cometeram autolesão não fatal.

A escetamina é a novidade do momento no tratamento da depressão. Esta substância antidepressiva foi aprovada em 2019 pela Food and Drug Administration (FDA), a agência reguladora norte-americana responsável pelo controle de medicamentos. O novo medicamento, que recebeu *status* de "terapia inovadora", é indicado para depressão resistente ao tratamento, ou seja, para aqueles pacientes que não respondem aos fármacos disponíveis até então. Este medicamento é a primeira a atuar sobre o glutamato, uma molécula da rede neural e reconhecida por estimular áreas do cérebro ligadas às emoções. Seu principal efeito é fortalecer e criar novas sinapses, as conexões entre os neurônios. Os efeitos da escetamina são rápidos, em menos de 24 horas após a aplicação nasal. Entretanto, esta substância não está indicada para todos os casos, muito menos substituirá as demais opções nas farmácias. Ela será prescrita inicialmente apenas na depressão resistente, quando o tratamento clássico não dá conta do recado. Espera-se também de que a escetamina sirva em breve para os quadros com alto risco de suicídio, em que é preciso obter uma resposta terapêutica quanto antes[49].

O uso de eletroconvulsoterapia (ECT) por corrente elétrica é uma modalidade biológica não farmacológica eficaz para tratamento de depressão e risco de suicídio. Atualmente, o seu uso em pacientes suicidas é restrito, visto que os protocolos de sua aplicação segura excluem a sua utilidade em situações emergenciais[50]. A estimulação magnética transcraniana é outra modalidade não farmacológica que ainda precisa estabelecer a sua eficácia e utilidade neste tipo de pacientes[51].

Perspectiva psicológica e social

É importante que o interconsultor considere, em sua atuação, os aspectos dinâmicos da relação doente-doença-médico-instituição, os quais interferem diretamente no adoecimento psíquico do paciente. Cerqueira[14] chama a atenção sobre os perigos do psiquiatra focar apenas nos aspectos orgânicos/biológicos do adoecimento, correndo o risco de uma "medicalização da saúde mental". Sendo assim, o manejo clínico psicológico e psicossocial pode ser realizado em conjunto entre psiquiatria e psicologia. Para suprir as demandas específicas do aspecto social, pode-se ainda contar com o suporte dos serviços de assistência social disponíveis.

Muitas das intervenções utilizadas para manejo de crise suicida no hospital provém da clínica tradicional, sendo então adaptadas para o *setting* em que está inserido, seja ele no serviço de emergência, na internação ou no ambulatório. Quando falamos do paciente suicida no ambiente hospitalar, a intervenção possui característica focal e breve. O profissional deve ter uma postura ativa e optar por intervenções mais diretivas, com o objetivo de proteção à vida do indivíduo. Estudos mostram que a intervenção breve pode ser parte importante e de baixo custo em programas de prevenção ao suicídio[52].

Algumas abordagens, como a terapia comportamental dialética (DBT), de Linehan, foram estudadas e validadas também em contextos de saúde, havendo alteração apenas do tempo de tratamento[53]. Outras abordagens já estudadas, com manuais baseados em evidências empíricas sobre sua efetividade com pacientes suicidas são, além da DBT: terapia baseada na mentalização, psicoterapia focada na transferência, terapia focada nos esquemas e terapia cognitivo-comportamental. Apesar de não haver evidência sobre quais estratégias fazem com que esses tratamentos sejam efetivos na redução de suicidalidade, há

algumas estratégias e intervenções que são utilizadas e indicadas não apenas por essas abordagens especificamente, mas também por outros estudos sobre intervenção com paciente suicida[29].

Algumas dessas intervenções e estratégias podem ser de grande utilidade para o interconsultor que for atuar com esse tipo de paciente. Selecionamos, portanto, algumas indicações de intervenções (Tabela 3) que o próprio interconsultor pode lançar mão para um atendimento de suporte e proteção à vida.

Tabela 3 Intervenções e estratégias para suporte psicológico ao paciente suicida

Tratamento interdisciplinar	Favorecer o atendimento multimodal e interdisciplinar que visem colaborar para maximizar o tratamento do paciente.
Sessão psicoeducativa breve	Facilitar o reconhecimento acerca dos comportamentos suicidas e estratégias de *coping* adaptativas e acerca das possibilidades de tratamento e encaminhamento.
Plano de segurança	Tendo o conhecimento das informações acima citadas, é possível desenvolver com o paciente o plano de segurança para manejo de crises – que poderá auxiliá-lo em possíveis crises, mesmo após a alta. O processo de construção do plano de segurança pode auxiliar inclusive pacientes com traços de impulsividade a detectar gatilhos e sentimentos que antecedem uma crise.
Atenção ao afeto/ intervenções de apoio	Foco em emoções e sentimentos do paciente, especialmente os que contribuem para o risco de suicídio. Facilitar exposição de afetos, pensamentos e sentimentos ou pensamentos abivalentes. Validação de sentimentos e emoções.
Postura ativa do profissional	Mostrar explicitamente seu envolvimento no tratamento, por meio de atitudes e comportamentos. Sugestões diretas e indiretas sobre possíveis recursos e estratégias de *coping*.
Suporte ao terapeuta	Supervisão/intervisão regular em grupo ou individual
Follow-up	Quando possível, o contato de *follow-up* é um importante fator para favorecer a mudança de comportamento. Quando realizada de forma sistemática após a alta pode ter uma influência positiva na prevenção de desfechos fatais, por até 18 meses após a alta de serviços de emergência.

Fontes: adaptada de Weinberg, 2010[29]; Fleishmann, 2008[52]; Wyder, 2007[23].

Considerando-se que muitas vezes o tempo para atuação com o paciente no âmbito hospitalar é limitado, os problemas interpessoais levantados durante a avaliação não precisam ser resolvidos durante um atendimento emergencial, por exemplo. O acolhimento inicial e a noção de que o problema pode ser resolvido posteriormente com ajuda profissional, muitas vezes já incentiva a adesão ao tratamento e encaminhamento posterior.

Além das intervenções e recursos citados acima, o profissional de saúde também pode utilizar-se do contrato de não suicídio. O contrato de não suicídio é um acordo realizado entre profissional e paciente, em que este se compromete a não cometer nenhum ato de autolesão ou tentativa de suicídio. Pode ser realizado de forma verbal e/ou escrito, como costuma ser realizado. No contrato podem ser colocados detalhes como a duração do acordo ou um plano de contingência para caso o paciente se sinta incapaz de cumprir com o acordo.

É possível, na prática clínica, encontrarmos diferentes visões e formas de trabalhar com o contrato de não suicídio. As opiniões sobre sua eficácia são bastante divergentes. Alguns estudos inclusive afirmam que o contrato de não suicídio pode não apenas não ser benéfico, mas como trazer prejuízos, a depender de como se usa e da população atendida[54]. Apesar de recomendado pela OMS para profissionais de atenção primária[25], a Associação Psiquiátrica Americana (APA) não recomenda o seu uso, pois o contrato pode dar confiança ao profissional e acabar substituindo uma adequada avaliação de risco[19]. Drew (1999) reforça que o sucesso do contrato de não suicídio pode ser facilmente prejudicado por diversos fatores, como: relação terapêutica não estabelecida, avaliação de risco incompleta, se o discernimento ou controle de impulsos do paciente estiver prejudicado, sentimentos agudos de desesperança e isolamento, ou se o paciente tem tendência a agir por impulsos autolesivos uma vez que as barreiras ambientais e/ou humanas são relaxadas. McMyler e Pryjmachuk[54] afirmam em seu estudo que não há atualmente evidências sobre a eficácia deste instrumento para a redução do risco de suicídio, apresentando alternativas ao uso do contrato de não suicídio, como: manejo de fatores de risco, uso do plano de segurança, tratamento medicamentoso, hospitalização e outras formas de manejo e tratamento.

Perspectiva socioambiental

A atuação do interconsultor não se limita à detecção e tratamento de transtornos mentais, mas também envolve o treinamento e psicoeducação de profissionais de saúde para a prevenção de suicídio e da família do paciente. Diversos estudos apontam para a importância do aspecto educacional da IC psiquiátrica e de um treino adequado da equipe de saúde para uma triagem mais eficaz e primeiros atendimentos mais adequados para o paciente com risco de suicídio[14,55,56]. Reji[55] ainda considera a importância de estender este aspecto educacional da intervenção psiquiátrica ao paciente e sua família.

O manejo ambiental deve sempre ter como principal objetivo a proteção do paciente frente a crises suicidas e possíveis atos impulsivos. É necessário então que se identifique qual o risco imediato para suicídio. Caso o paciente tenha dado entrada em um serviço de emergência após uma tentativa ou no caso de paciente com risco de suicídio iminente, algumas precauções em relação ao ambiente são necessárias.

Em primeiro lugar o manejo ambiental deve reduzir ao máximo o acesso aos meios: remoção de objetos periogosos (perfurocortantes, cinto, cadarço, medicamentos etc.), proteção de janelas ou manter o paciente em andar baixo, manter o paciente em um local de fácil observação pela equipe de saúde. É importante também não deixar o paciente sozinho, manter um contato mais frequente como forma de apoio emocional, para que o paciente sinta-se cuidado pela equipe (deve-se cuidar para que o paciente não se sinta vigiado, pois isso poderá suscitar nele sentimentos de raiva e aumentar o risco). A restrição de acesso a possíveis meios letais é uma forte ferramenta para a prevenção do suicídio, muito eficazes quando combinadas com intervenções psicossociais[15].

Reações da equipe de saúde

É comum que o paciente suicida suscite na equipe de saúde sentimentos de raiva, ansiedade, frustração e até mesmo resistência, especialmente quando este chega ao pronto socorro apresentando agitação e hostilidade, durante uma crise suicida. É esperado que pacientes em crise suicida despertem essas emoções na equipe, devido não apenas à agitação e hostilidade, mas também em razão do fato de que seu comportamento autodestrutivo muitas vezes entrar em conflito com a religiosidade e crenças dos profissionais de enfermagem[21,57]. A atitude de resistência da equipe de saúde frente ao paciente suicida muitas vezes dificulta uma avaliação mais precisa do risco de suicídio[13].

É tarefa do interconsultor auxiliar a equipe na compreensão de fatores relacionados a esses pacientes, como a psicodinâmica relacionada à ambivalência do comportamento suicida. Muitas vezes o comportamento suicida é em si um pedido de ajuda, mas um pedido sobre o qual o paciente não é capaz de verbalizar. Pacientes em crise suicida normalmente estão com a cognição e percepção da realidade distorcidos e isso deve ser levado em consideração quando a equipe for lhe prestar assistência. Esses esclarecimentos à equipe de saúde podem preparar melhor os profissionais para lidar com esse tipo de paciente, facilitando a realização e manutenção de procedimentos de saúde necessários. Esse tipo de atuação do interconsultor pode ser realizado por meio de reuniões clínicas com a equipe de saúde envolvida nos cuidados do paciente[21,24]. O treino da equipe de saúde para manejo do paciente suicida deve envolver não apenas aquisição de conhecimento, mas mudança de atitude[57].

A família do paciente suicida

Em casos que a família é quem leva o paciente ao serviço de emergência, ela também poderá ser beneficiada de um acolhimento inicial, uma vez que a situação de acompanhar um familiar ao serviço de emergência após uma tentativa de suicídio pode gerar intensas emoções e ter efeitos traumáticos. Muitas vezes a família pode ser beneficiada com reuniões psicoeducativas, de forma a reduzir a ansiedade dos familiares e envolvê-los nos cuidados. É normal que família e amigos não saibam como lidar com a situação. É tarefa do interconsultor abordar o tema de forma acolhedora e esclarecedora para que possam envolver-se nos cuidados do paciente e seguir as recomendações de medidas de proteção necessárias, especialmente no momento de alta[24,44].

PREVENÇÃO DO SUICÍDIO

É importante lembrarmos que o suicídio é evitável em muitos casos e que há recomendações de estratégias para a prevenção de desfechos fatais. Um importante fator para a prevenção do suicídio é a detecção precoce do paciente em risco e prosseguimento com as ações adequadas para seu tratamento. Quando a equipe possui informações e treino adequado para uma triagem inicial, favorece o encaminhamento aos serviços de saúde mental, funcionando assim como *gatekeepers* – pessoas com conhecimento e habilidades para identificar indivíduos em risco de suicídio, determinar o nível do risco e encaminhar para tratamento adequado[15]. O treino de profissionais da atenção primária e de clínicos gerais para triagem e manejos iniciais tem mostrado grande importância na prevenção de suicídios, sempre complementados por outras estratégias de prevenção[58,59].

Outra forma de prevenir o suicídio, como dito acima, é por meio de cuidados no ambiente em que os pacientes estão inseridos. Realizar um controle de medicações, proteger janelas e locais altos, utilizar chuveiros sem mangueiras (que não permitam enforcamento) são alguns exemplos. A restrição de acesso a meios letais é uma das formas mais eficazes na prevenção de suicídio[58,59].

Além de tais manejos, Zalsman et al.[59] menciona também, dentre seus achados, alguns estilos específicos de psicoterapias que têm se mostrado eficazes na prevenção de suicídios, como dito anteriormente. Algumas delas são: terapia cognitivo-comportamental, terapia comportamental dialética (algumas adaptações com menores custos têm se mostrado promissoras), terapia de resolução de problemas. Terapia familiar e terapias de abordagem multissistêmica que trabalhe com habilidades parentais, comunidade, escola e suporte entre pares e engajamento em atividades sociais têm sido associada a uma redução de tentativas de suicídio entre adolescentes.

PLANEJAMENTO DA ALTA E ENCAMINHAMENTO

A reavaliação sistemática do risco de suicídio entre 24 a 48 horas antes da alta tem se mostrado um importante meio para prevenção de suicídio[58]. Essa avaliação antes da alta permite uma comparação com a avaliação inicial, possibilitando avaliar se o risco reduziu o suficiente para embasar a alta[19]. A avaliação no processo de alta também permitirá tomar melhores decisões sobre encaminhamentos a serem indicados para o paciente.

Deve-se oferecer aos pacientes uma consulta de seguimento com retorno breve, preferencialmente com a pessoa que fez o primeiro atendimento quando possível. No caso de ser

atendido numa unidade de emergência, é recomendável que, ao sair dela, o paciente já saiba quando, onde e, idealmente, com quem o seu seguimento será feito. Apresentamos na Figura 1, um fluxograma de atendimento ao paciente suicida. Cada etapa de avaliação, manejo e encaminhamento devem levar em conta o grau de risco de cada paciente particular, levando-se em conta os aspectos psiquiátricos, psicossociais e ambientais do paciente.

CONSIDERAÇÕES FINAIS

O ofício do interconsultor diante de pacientes com risco de suicídio não é simples. Envolve atuar em diversas frentes, junto ao paciente, à equipe e muitas vezes junto à família. A escolha de qual tipo de interconsulta – de ligação ou consultoria – dependerá dos recursos disponíveis, avaliando sempre a melhor relação custo-efetividade. O ideal é que o profissional de saúde mental possa atual como mediador da relação equipe-paciente, de forma a auxiliar a equipe a lidar com as questões complexas e carga emocional da assistência ao paciente em risco de suicídio. Neste âmbito, o interconsultor também deve auxiliar o paciente a compreender e expressar suas emoções, bem como a desenvolver estratégias de *coping* e definição de um plano de segurança – quando indicado – , com o objetivo final sempre de proteger a vida do paciente.

Quando o interconsultor é chamado a avaliar o risco de suicídio e indicar tratamento, sabemos que tal tarefa é complexa e consiste em um processo contínuo. Avaliar o risco de suicídio

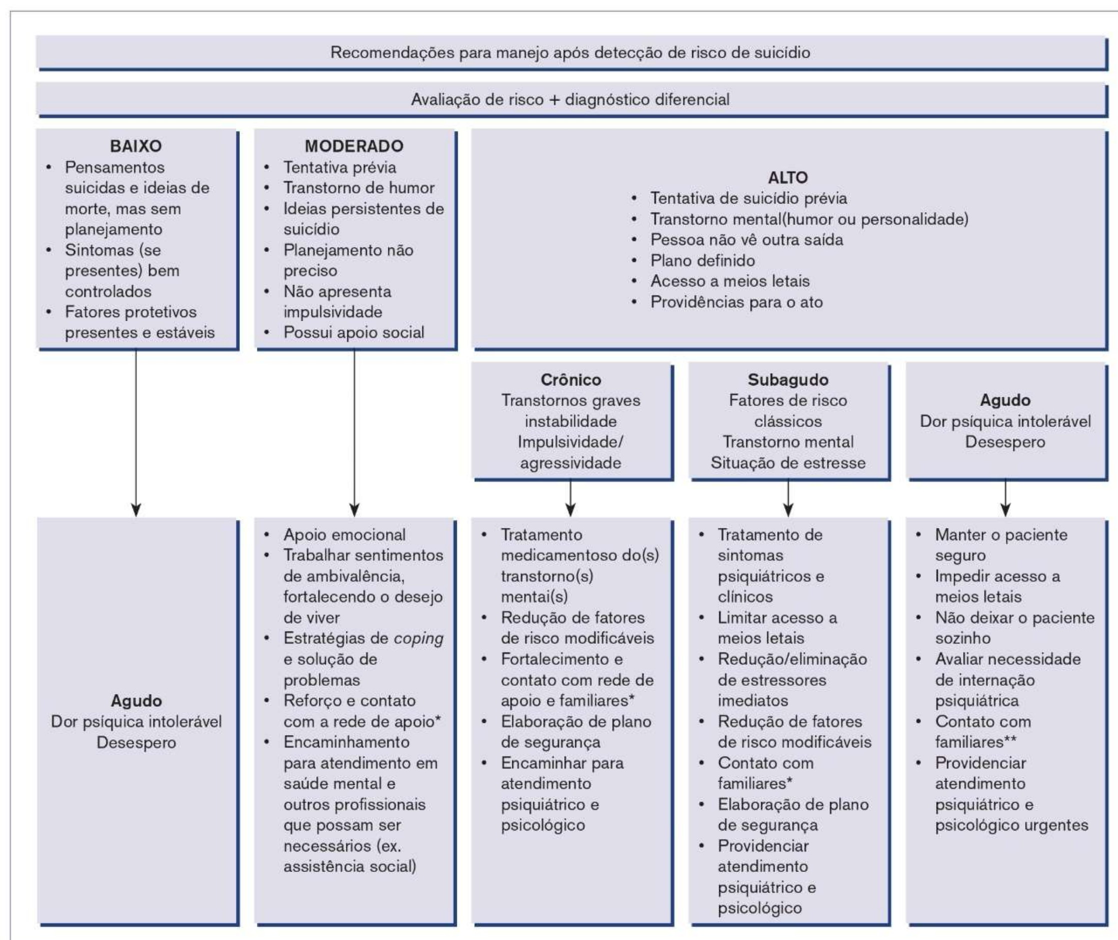


Figura 1 Fluxograma sugerido de atendimento ao paciente suicida.

*Sempre que contatar a família do paciente, é recomendável que se faça com o consentimento deste, para melhor adesão ao tratamento e manutenção do vínculo de cuidado.

**Em casos de risco iminente, deve-se avaliar a capacidade de decisão do paciente para dar tal consentimento, prezando sempre pela segurança do paciente. É importante que o paciente saiba do contato com a família, mesmo que não concorde.

Fonte: adaptada de OMS, 2000[25] e Botega, 2015[24].

envolve realizar entrevistas clínicas com o paciente, coleta de dados com familiares e rede de apoio, aplicação de instrumento – se necessário – e então a indicação de manejo e tratamento. Ao abordar o paciente é importante que o profissional tenha postura ativa e empática, de forma a construir uma aliança terapêutica que transmita confiança e esperança ao paciente.

Com objetivo final de manter o paciente seguro, o manejo deve ser decidido conforme o risco avaliado e pode envolver alterações ambientais, tratamento farmacológico, intervenções terapêuticas e de apoio emocional, entre outras possibilidades. É fundamental que se documente as informações da avaliação de risco e definição de manejo e tratamento, para que os profissionais envolvidos no cuidado do paciente possam acessá-las e para que se mantenha atualizado o histórico de tratamento e evolução do paciente.

Por ser um ofício de intensa carga emocional, é importante também que o profissional de saúde mental tenha sua própria rede de suporte, por meio de supervisões ou reuniões clínicas, em que se possa compartilhar o peso da responsabilidade dos cuidados do paciente em risco, bem como por práticas de autocuidado.

Atualmente há uma escassez de estudos acerca da interconsulta psiquiátrica no Brasil. Tal fato dificulta a definição de melhores protocolos de atuação. Também podemos observar a importância de mais pesquisas acerca instrumentos eficazes de avaliação de risco de suicídio que possam auxiliar aos profissionais de saúde mental nas decisões acerca do manejo de tais pacientes. Por fim, nota-se a importância do treino de profissionais da saúde acerca de triagem, manejo e encaminhamento adequados dos pacientes em risco de suicídio, sendo esse um passo fundamental para a prevenção nos âmbitos da saúde.

Para aprofundamento

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  - ⇨ **Este manual abrangente apresenta em 15 capítulos os aspectos relevantes de suicidologia. Livro de grande interesse para conhecer mais sobre as teorias e perspectivas globais de prevenção de suicídio.**
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6.2 Apêndice 2. Relationship between academic life, mental health, and risky behaviors among college students: A latent class analysis from a Brazilian nationwide survey

Manuscrito em produção, a ser submetido.

Title: Relationship between academic life, mental health, and risky behaviors among college students: A latent class analysis from a Brazilian nationwide survey

Running title: Academic life, mental health, and risky behaviors among college students

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Introduction

Suicide is one of the leading causes of death among youth aged 15-29 years old (World Health Organization [WHO], 2021a), and the numbers are not getting any better in the las years (Lipson et al., 2022; Van Meter et al. 2022). The increasing numbers of suicidal thoughts and behavior (STB) among young people is worrying, representing a warning call to the understanding of its epidemiology as a priority for developing appropriate strategies for its prevention. Current knowledge about the factors associated with suicide among young university students is scarce, hindering the development of effective prevention strategies for this population.

Transitioning to adulthood requires youths to take on greater responsibility and independence compared to adolescence. Additionally, college students are challenged with demanding academic routines. Previous studies suggest relationships of STB with low social-connectedness, early-life adversities, mood and substance-use disorders, and school-related problems (Cash and Bridge, 2009; Drum et al., 2009; Aggarwal et al., 2017; Cha et al., 2018; Li; Dorstyn; Jarmon, 2019; Poland and Ferguson, 2021). However, there are few studies investigating the relationship between academic context and STB. Previous findings associate psychological distress and STB to specific education-related factors, such as low academic performance, pressure to succeed, study workload, dissatisfaction, low motivation, and learning difficulties (Ross; Niebling; Heckert, 1999; Beiter et al., 2015; Auerbach et al., 2018; Barker et al., 2018; Duffy et al., 2020; Cheng et al., 2020; Sheldon et al., 2021). From the initial study (Altavini et al., 2023) conducted in the present research, we found an association between suicidal ideation and sexual abuse, mental health indicators, and some academic factors, such as: low academic achievement, dissatisfaction with the chosen undergrad course, and thoughts about dropping out or take a leave of absence from college.

The mere knowledge of risk factors, however, might not be sufficient to identify vulnerable students effectively. A person-centered approach necessary for depiction of individuals, instead of variable-centered approaches. To our knowledge, no study has considered patterns of academic-adjustment and mental health indicators simultaneously, while also measuring its relationship with suicide ideation.

Typically, latent class analysis (LCA) is used to identify groups of individuals with similar characteristics within heterogeneous populations. It provides an interpretable solution by identifying the most representative response patterns within a sample, instead of analyzing variables individually and finding associations between them. In the present study our aim is to identify subgroups of Brazilian college students, according to indicators of academic adjustment and mental health, and analyze their association with suicidal ideation and depressive symptoms. By combining these measures, LCA consists in a mindful, concise, and relevant way to describe patterns that might otherwise be difficult to depict (Nylund-Gibson et al., 2022), allowing us to identify potentially vulnerable students.

Methods

Sampling

The present study is a cross-sectional nationwide study that investigates the use of alcohol, tobacco, and other drugs among college students, from 27 Brazilian state capitals (Andrade; Duarte; Oliveira, 2010). A probabilistic and stratified sample from public and private HEIs was randomly selected and recruited in a two-stage sampling process. In the first stage, the HEIs were selected using a list provided by the Brazilian Ministry of Education. The HEIs that agreed to take part in the survey provided a list of all classroom-based undergraduate programs, from which the classes were randomly selected. A class is a group of students taking a particular subject during their undergraduate education. The data collection process was completed in 2009.

Students from the selected classes were invited to voluntarily participate in the study. Considering the students in class at the time of the survey, the response rate was 95.6%. Conglomerates were of unequal sizes, once that the size of HEIs and classes were not always equal (regarding the number of students). For performing the estimates and data analyses, we considered cluster size and the intraclass correlation. A detailed description of the sampling process and sample statistical corrections can be found elsewhere (Andrade; Duarte; Oliveira, 2010).

Participants

The original study sample included 12,721 students. From those, ten were excluded because respondents stated using the dummy drug "*Relevin*". Additional 466 were excluded because the suicide ideation item was not answered. Hence, a final sample of 12,245 valid questionnaires was considered for analysis.

Measures

All students responded to an anonymous, structured self-administered questionnaire with 98 closed questions with an emphasis on drug use and related disorders, risk behaviors, and the existence of psychiatric comorbidity (depressive symptoms, psychotic symptoms, and nonspecific psychological complaints), including sociodemographic characteristics, and academic-life characteristics.

The latent-class model included dependent variables that could indicate: (a) the students' academic adjustment: thoughts about dropping out or taking a leave of absence, current satisfaction with the chosen course; (b) clinical indicators of mental health status: past-month psychological distress; past-month psychotic-like symptoms; past-month use of non-prescribed drugs; past-month binge drinking. We also investigated the association between the retrieved latent classes with outcomes: suicide ideation, depressive symptoms, risky behavior, and academic achievement, adjusted for covariates: age, sex, economic strata, HEI funding, paid activity, and the participation on social activities.

Previous studies suggest a relationship between academic indicators, poor mental health, and SI during the adulting phase (Ross; Niebling; Heckert, 1999; Kessler et al., 2005; Hansen and Lang, 2011; Beiter et al., 2015; Mortier et al., 2015; Auerbach et al., 2016; Duffy et al., 2020; Sheldon et al., 2021). Considering our findings from previous study (Altavini et al., 2023), we hypothesize that students could be clustered into subgroups with similar patterns of academic adjustment and mental health indicators. Additionally, we also hypothesize that the identified subgroups regarding academic adjustment and mental health indicators may be differentially associated with the likelihood of presenting suicidal ideation, depressive symptoms, risky behaviors and

lower academic achievement. Those results could potentially indicate vulnerable groups of students for STB.

Suicide ideation was defined as the primary outcome for all analyses. It is widely recognized that prior suicide attempts are linked to suicidal behavior (Franklin et al., 2017; Large; Corderoy; McHugh, 2021) and thus provide important information for the assessment and prevention of suicide (Jobes and Joiner, 2019; Hawton et al., 2022). In light of the fact that just a fraction of students with SI will engage in life-threatening activities, early identification - a key-component of the LIVE LIFE guidelines - allows for timely interventions and prevents tragic outcomes (Harmer et al. 2024; WHO, 2021b; Hawton et al., 2022). Because depressive symptoms were measured by the BDI-II, the inclusion of this measure as a LCA indicator could have an overlap with our primary outcome, so we decided to include it as a secondary outcome. Findings from the World Mental Health Surveys International College Student Project (Auerbach et al., 2018) indicate that depression was the most common mental disorder among college students. Alongside with SI, depression is one of the major suicide risk factors known by current literature (Turecki and Brent, 2016; Bernanke et al., 2017; Fazel and Runeson, 2020; Casey et al., 2022), and it can also be associated with psychological distress and difficulties in dealing with the challenges of academic life (Duffy et al., 2020; Sheldon et al., 2021). Finally, academic achievement was also included as a secondary outcome, once it is reasonable to hypothesize that it could be affected by students' academic adjustment and mental health, based on previous findings (Duffy et al., 2020; BlackDeer et al., 2021).

Depressive symptoms were assessed by the general score from the BDI-II, which was dichotomized to indicate the presence (score ≥ 11) or absence of depressive symptoms (Gomes-Oliveira et al., 2012). We used the used the isolated item #9 from the Beck Depression Inventory-II (BDI-II) to assess suicide ideation. The BDI-II is a validated self-report tool for use in the Brazilian-Portuguese speaking population (Gomes-Oliveira et al., 2012). The BDI-II item #9 asks the individual to choose, from the following statements, which one best describes their feelings during the last 15 days: (0) "*I don't have thoughts of killing myself*"; (1) "*I have thoughts of killing myself, but I would not carry this out*"; (2) "*I would like to kill myself*"; (3) "*I would kill myself if I had the chance*". In light of previous literature (Wenzel; Brown; Beck, 2010; American

Psychiatric Association, 2013), we defined suicide ideation in a broader sense, including any cognitions of killing oneself, even if one would not carry it out. Thus, the item #9 was dichotomized into a "yes/no" variable to denote the presence or absence of suicide ideation, as adopted in previous literature (Fitzpatrick; Witte; Schmidt, 2005; Arria et al., 2009; Farabaugh et al., 2012).

The past-month psychological distress was investigated using the self-administered version of the Short K6 Scale (Kessler et al., 2002). This tool is composed of six items in Likert scale, to indicate the temporary duration of the symptoms, from "all the time" (4) to "never" (0). The K6 scale was designed to discriminate cases of serious mental illness from non-cases (Kessler et al., 2010; National Comorbidity Survey, 2005). For analytical purposes, the K6 score was dichotomized to indicate the presence (score $\geq$ 6) or absence of psychological distress (Viana, unpublished results).

Four questions from the Self-Report Questionnaire (SRQ) were included in the survey to investigate past-month psychotic-like experiences. Students were asked to answer "yes" or "no" to the following questions: (1) "*Do you feel that someone, somehow, wants to hurt you?*"; (2) "*Are you someone much more important than most people think?*"; (3) "*Have you noticed any interference or other strange problems with your thinking?*"; and (4) "*Do you hear voices you don't know from where they come or that other people can't hear?*". The World Health Organization (WHO) recommends the SRQ for quick detection and classification of community-dwelling individuals presenting persecutory symptoms, especially in developing countries (Harding et al., 1980; Salleh, 1990). The presence of psychotic-like experiences is regarded as an indicator of reduced psychological functioning (Unterrassner et al., 2017), reduced social achievement (Rössler et al., 2007), and poorer health status (Nuevo et al., 2012). Based on the perspective continuum model of psychosis (van Os et al., 2008), a sizable proportion of people living in the community could present some of the aforementioned symptoms, but with no clinical relevance. For analytical purposes, the items were combined into a dichotomized variable to denote the presence or absence of psychotic-like experiences.

The structured questionnaire Alcohol, Smoking, and Substance Screening Test Involving (ASSIST) was used to collect data regarding substance use. For analysis, we used data regarding past-month binge drinking behavior - defined according to the definition from the Centers for Disease Control and Prevention (CDC, 2019) and National

Institutes of Health (NIH/NIAAA, 2020) criteria - , and general use of all other non-prescribed substances (inhalants, marijuana, cocaine, crack-cocaine, merla, amphetamines, anticholinergics, tranquilizers, opiate analgesics, sedatives, anabolic androgenic steroids, hallucinogens, ecstasy, and synthetic drugs). The general non-prescribed drugs items were combined into a single dichotomized item to denote non-users and users. The 'social activities' variable was categorized considering if the student took part in none, one, or two and more activities that necessarily involved interaction with other persons. From the six variables included in the LCA model, five were dichotomized to denote the presence of absence of the assessed variable.

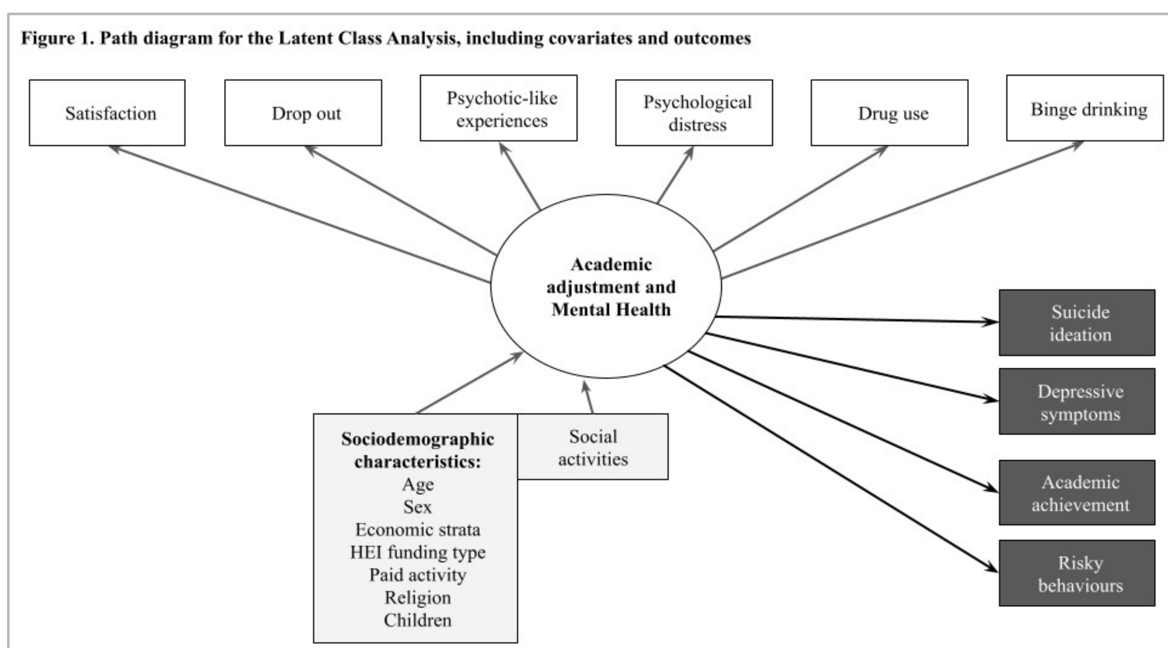
Other relevant topics were addressed in the survey tool by individual questions, such as academic performance in the last semester ["*In the past semester or academic year, you have: (1) Passed all subjects; (2) I resat for the exam but passed these subjects; (3) Pending subjects, but have not missed the year; (4) Repeated the year; (5) Other*], thoughts about dropping out the program or take a leave, ["*Regarding your undergraduate course (circle only one answer): (1) I've never thought of dropping out of the course or taking a leave of absence; (2) I've thought of dropping out of the course or taking a leave of absence; (3) I took a leave of absence once"*), current satisfaction with the chosen undergraduate course ("*Are you satisfied with the undergraduate course you have chosen?"*] and social activities when not in class ["*Except for your vacation period, which activities do you usually engage in when out of classroom? (1) I take part in student organizations (Academic Center/Fraternity) (2) I take part in academic projects guided by one or more professors. (3) I take part in physical or sporting activities. (4) I take part in inter-college sports competitions. (5) I study outside class hours. (6) I interact and spend time with my friends. (7) I watch TV or videos/DVDs. (8) I play video or PC games. (9) I use the Internet for fun (social networks, chat rooms, music, games and other types of online entertainment). (10) I send and receive emails. (11) I use Instant Messengers (e.g. MSN). (12) Other hobbies (reading books for pleasure, playing musical instruments, singing in choirs, drawing, painting, and other artistic activities). (13) Volunteer work (14) Paid job]*. Because the dichotomization of variable 'dropout' could impair the interpretation of findings, those variables were included in the model as categorical variables, with three categories each. To better control the outliers' effect, the variable 'age' was categorized into four categories: under 18 years old, 18-24, 25-34, and 35 or more years old.

Analysis

Using a set of observed variables, Latent Class Analysis allows to form groups according to identified patterns of responses. Through this method, patterns can be described in a useful, concise, and meaningful manner (Nylund-Gibson, 2022). We built the three-step LCA model based on our previous findings regarding associations of suicide ideation with academic characteristics and mental health indicators (Altavini et al., 2023). Additionally, we considered statistical information about the quality of items individually. The univariate entropy - also regarded as variable-specific entropy - provides information about how much each indicator contributes to class identification. Indicators with univariate entropy values near zero were removed from the LCA model (Asparouhov & Muthén, 2018).

The final LCA model included the independent variables: satisfaction with the chosen course, thoughts about dropping out or taking a leave of absence, past-month psychotic-like symptoms, past-month psychological distress, past-month use of non-prescribed drugs, and past-month binge drinking; the covariates: age, sex, economic strata, HEI funding type, paid activity, religion, children, and social activities; and the outcomes: suicide ideation, depressive symptoms, risky behaviors, and academic achievement, as presented in the path diagram (**Figure 1**). For facilitating the reading and interpretability of the results presented, we decided to name this group of variables included in the LCA model as a "academic adjustment and mental health" model.

Figure 1. Path diagram for the Latent Class Analysis, including covariates and outcomes



To identify patterns of academic achievement and mental health, by estimating a model with one class and then adding classes until the most fitting model was retrieved. We examined model fit based on our theoretical understanding of the students mental health (Ross; Niebling; Heckert, 1999; Kessler et al., 2005; Hansen and Lang, 2011; Beiter et al., 2015; Mortier et al., 2015; Auerbach et al., 2016; Duffy et al., 2020; Sheldon et al., 2021, Altavini et al., 2023) and the following statistical criteria: Akaike Information Criteria (AIC); Bayesian Information Criteria (BIC); Sample-adjusted Bayesian Information Criteria (SABIC); and Consistent Akaike Information Criteria (CAIC); with lower values indicating better model fit (Nylund et al., 2007). Bootstrapped likelihood ratio and the Vuong-Lo-Mendell-Rubin tests were not examined because they do not consider sampling weights (Muthén, 2016). Our models were also evaluated through diagnostic criteria, which can serve as a complementary information to model fit indices and are useful to evaluate how well the model classifies individuals on each latent class (Weller et al., 2020; Nylund-Gibson et al., 2022). As there is no definitive cutoff criterion, entropy values closer to 1.0 were preferred (Muthén, 2008; Nylund-Gibson et al., 2022). Moreover, we sought a posterior probability with values closer to 1.0 in the lowest value of each LCA model (Nylund-Gibson et al., 2022). After selecting the best model, we then fixed measurement parameters of the LCA model, using the three-step approach for further analysis of the latent classes regarding covariates and outcomes (Vermunt, 2010; Asparouhov and Muthén, 2014; Nylund-Gibson et al., 2019).

Following, we conducted a logistic regression to examine the relationship between the identified classes with covariates as potential latent class predictors: age, sex, economic strata, HEI funding type, paid activity, religion, children and social activities. Finally, we conducted a logistic regression to examine whether the identified patterns of academic adjustment and mental health were associated with our outcomes: suicide ideation, depressive symptoms, risky behaviors, and academic achievement. Highly skewed covariates, such as ‘religion’, and ‘children’, prevented us from examining the classes' association with outcomes. For this reason, we removed them from the final logistic regression models, as recommended (Muthén, L. 2024, personal communication).

STATA, version 15 (StataCorp, 2017) was used to run descriptive statistics, using the survey option ('svy' command) to adjust for sampling error and unequal probability of selection. For the target population, prevalence estimates and regression analyses are

presented as weighted indicators. For the LCA and logistic regression analysis, we used the MPlus software, version 8.10 (Muthén and Muthén, 1998-2017; Muthén and Muthén, 2023), using the manual three-step method to include covariates and outcomes, applying correction weights to adjust for sampling error and unequal probability of selection, which allowed to estimate logistic regression analysis for investigating the relationship between the latent classes and the outcomes, adjusting for covariates. Logistic regression coefficients are reported as odds ratio (OR), with 95% confidence intervals (CI).

Ethics statement

All participants provided written informed consent before participating in the data collection. The Ethics Committee for the Analysis of Research Projects at the University of São Paulo Medical School approved the present study (protocol# 4.711.369).

Results

Women constituted 57.5% of the sample, while men made up 42.5%, with an average age of 25 years (SE = 1.0). Most of them were never married (77.2%). Furthermore, most students identified themselves as having "white" skin color (62.2%) and following a religion (84.7%). Almost half of the students were from middle-to-high-income families (48.7%) (Brazilian Association of Research Companies - Associação Brasileira de Empresas de Pesquisa - ABEP, 2011). Most students were from private funded HEIs (77.7%). Nearly half of the students reported psychotic-like experiences within the past month (49%), 32.5% reported psychological distress, around a quarter (25.7%) presented depressive symptoms in the las two weeks, and 5.9% stated they had thoughts of suicide within the last two weeks. Regarding substance use, 24,4% of students claimed to have used some kind of non-prescribed drug in the past month, and the majority (58.5%) of students presented binge drinking behaviors. A detailed table of the weighted proportions of the college students' sociodemographic characteristics is presented in previous analysis (Altavini et al., 2023). **Table 1** presents the weighted proportions of college students, for the variables included in the LCA model, along with covariates and outcome variables.

Table 1. **Weighted proportions, of the college students' academic and mental health characteristics, from the I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras, 2009**

Variable	N (%*)
	Total = 12,245
Academic characteristics	
Satisfaction with course	
No	997 (7.75)
Yes	11,201 (92.25)
Drop-out thoughts	
Never thought about dropping-out the program or leave of absence	7,866 (63.99)
Have thought about dropping-out the program or leave of absence	3,721 (28.95)
Have already taken a leave of absence	606 (7.06)
Academic achievement	
Passed all courses	10,317 (86.06)
Repeated the year	192 (2.47)
Other	1,284 (11.47)
Mental health and substance use	
Risky behavior	
No	6,463 (57.19)
At least one	4,694 (42.81)
Depressive symptoms	
No	8,344 (74.32)
Yes	2,818 (25.68)
Suicidal Ideation	
No	11,377 (94.08)
Yes	868 (5.92)
Psychological distress[2]	
No	7,406 (67.55)
Yes	3,718 (32.45)
Psychotic-like experiences	
None	5,937 (50.91)
At least one	5,757 (49.09)
Drug consumption	
No	9,912 (75.64)
Yes	2,333 (24.36)
Binge drinking [3]	
No	4,071 (41.48)
Yes	5,499 (58.52)

* Weighted proportion of the full sample

ᐞ Pearsons' X^2, with Rao-Scott correction

[2] M.C. Viana, personal communication, 3 August, 2021

[3] According to Centers for Disease Control and Prevention (CDC, 2019) and National Institutes of Health (NIH/NIAAA, 2020) criteria

3.2. Extraction and selection of latent classes

Results from the LCA suggested that subgroups of college students can be identified according to academic adjustment and mental health indicators. **Table 2** presents the results of information and diagnostic criteria for each *k*-class solution tested. It is possible to observe a decrease of the information criteria values from the 1-class model to the 5-class model - however, on a smaller scale as the number of classes increases. It is noteworthy, though, that it is not uncommon that the information criteria values present a decrease for each additional class added (Nylund-Gibson et al., 2022).

Alongside with the information criteria, we consider the diagnostic criteria and the interpretability of the solutions to compare the different solutions of LCA models, as recommended (Weller et al., 2020). Even though the final model is not selected based on entropy, it is important to note that the four-class model had the best entropy (closer to 0.8). On the other hand, the posterior probability of the average latent class was better for the two-class solution. Finally, we also consider the number of students in each class Finally we also consider the number of students in each class, examining whether the model fit statistics support the selected solution, and whether the class sizes make conceptual sense (Weller et al., 2020). A statistical analysis alone should not be used to dismiss a solution without considering its real-world relevance (Nylund-Gibson et al., 2022).

Table 2. Information and diagnostic criteria for k-class solution of the unconditional LCA models

Information Criteria						
Model (k-class)	**LL**	**npar**	**AIC**	**BIC**	**SABIC**	**CAIC**
1	-42052.15	7	84118.30	84170.19	84147.94	84177.19
2	-41310.56	15	82651.12	82762.31	82714.64	82464.92
3	-40970.92	23	81987.85	82158.34	82085.25	81702.35
4	-40780.38	31	81622.77	81852.57	81754.05	81237.97
5	-40684.18	39	**81446.36**	**81735.46**	**81611.53**	**80962.26**

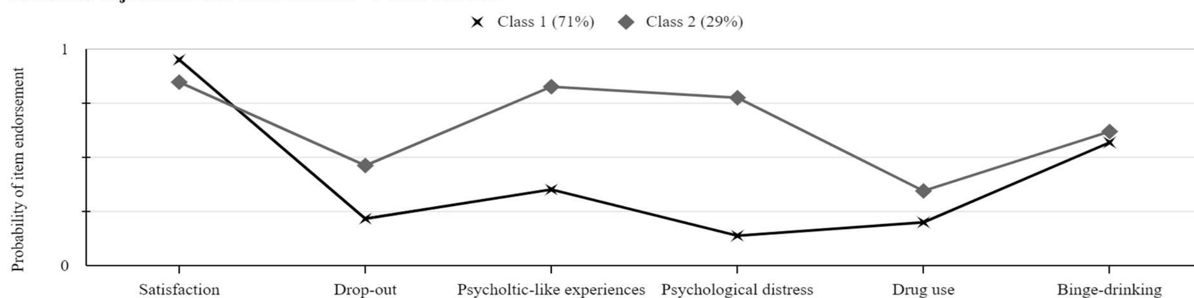
Diagnostic criteria				
Model (k-class)	**Smallest class count (n)**	**Smallest class size (%)**	**Entropy**	**ALCPP**
1	12245	100	-	**1.00**
2	3553	**29.01**	0.51	**0.79**

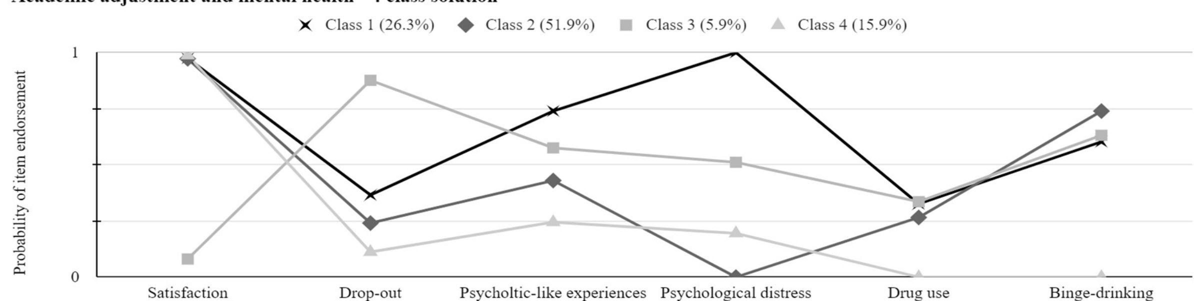
3	1546	**12.63**	0.70	0.73
4	726	5.93	**0.77**	0.65
5	797	**6.51**	0.64	0.69

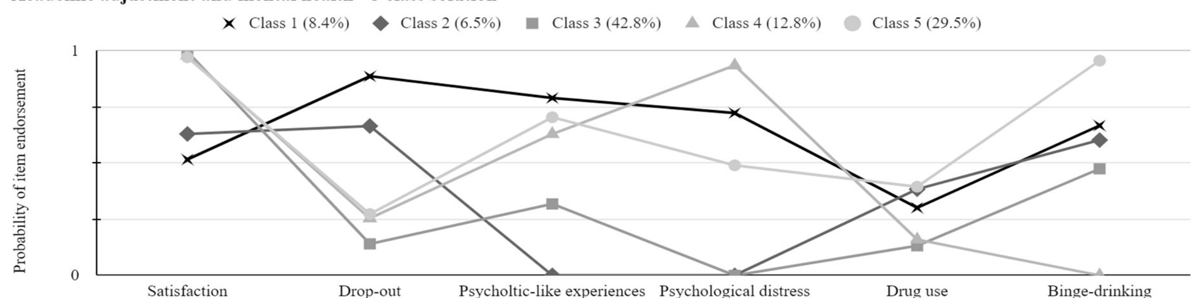
Note: Bold text indicates that the model met fit criteria. LL=Log-likelihood; npar=number of free parameters; AIC=Akaike Information Criteria; BIC=Bayesian Information Criteria; SABIC=Sample-adjusted Bayesian Information Criteria; CAIC=Consistent Akaike Information Criteria; ALCPP = average latent class posterior probability

It is necessary to consider not only the information criteria, but a close study of each solution is also often needed to select the best model (Nylund-Gibson et al., 2022), once that there is no point in having a *k*-class solution if it makes no sense theoretically (Weller et al., 2020) or has no clinical applicability. After running LCA with the variables of the model, we present the two, four, and five-class models for comparison as those were the solutions with the best information or diagnostic criteria. The plots are presented in **Figure 2**, for a better comparison between the potential solutions.

Figure 2. Conditional item probability plots presenting the 2-class, 4-class, and 5-class LCA models of academic adjustment and mental health.







The four-class model was ultimately selected as the best model based on the following: (a) the convergence of the BIC, ABIC, AIC, and CAIC results, and (b) examination of the classes of the four-class model pointed to a reasonable interpretation of the classes. Although entropy is not a criterion for model selection, it is noteworthy that the four-class model presented the best entropy, indicating that class identification was better for this model.

3.3 Description of latent classes in the k-class model

Figure 2 shows the conditional item probability profiles for different latent classes. Across the x-axis are the six items while the y-axis represents the probability of endorsing a given item. Looking at Class 4 (15.9%), we see that this class can be characterized by the “Ordinary” students, presenting high satisfaction with the course, low desire to drop-out, low levels of mental health problems (both psychotic-like experiences and psychological distress), low drug use and binge drinking. Both Class 1 (26.3%%) and Class 2 (51.9%) present the two other classes of satisfied students. However, the students included in Class 1 presented higher probability psychological distress, while Class 2 is represented by students with higher probability of engaging in binge drinking behavior. Finally, the Class 3 (5.9%%) represent the dissatisfied students, with higher likelihood of having thoughts about dropping-out the college. Considering the characteristics of students that prevailed in each class, in order to facilitate interpretation of findings and discussion, we named the classes as follows: Class 1 “Psychologically Distressed”; Class 2 “Binge drinkers”; Class 3 “Dissatisfied”; and Class 4 “Ordinary”. Despite not being a central focus of this study, results from the three-step approach indicated that, compared with the “Ordinary” students class, ‘Binge drinkers’ and ‘Dissatisfied’ students were less likely to be women. There were no other significant sociodemographic differences among classes (**Supplementary Table 1**).

Supplementary Table 1. Logistic regression results comparing subgroups of students by covariates, "Ordinary" as reference

	OR [95%CI]		
	Psychologically distressed (26.3%)	**Binge drinkers (51.9%)**	**Dissatisfied (5.9%)**
Sex (female)	0.37 [0.14 - 1.03]	0.22 [0.08 - 0.61]	0.31 [0.13 - 0.73]
Age (18-24)	0.88 [0.25 - 3.04]	0.64 [0.17 - 2.49]	0.69 [0.08 - 6.02]

Age (25-34)	1.89 [0.53 - 6.73]	1.44 [0.28 - 7.33]	1.49 [0.14 - 15.5]
Age (35 and over)	2.11 [0.31 - 14.13]	3.06 [0.46 - 20.42]	0.31 [0.01 - 16.51]
HEI funding (private)	1.46 [0.81 - 2.61]	1.72 [0.82 - 3.57]	0.61 [0.23 - 1.60]
Economic strata B	2.06 [0.87 - 4.87]	1.95 [0.88 - 4.33]	1.67 [0.93 - 3.01]
Economic strata C/D/E	1.20 [0.72 – 2.00]	0.69 [0.39 - 1.22]	0.56 [0.32 - 1.01]
Paid activity (yes)	0.52 [0.24 - 1.15]	0.54 [0.20 - 1.41]	1.34 [0.6 -4 2.83]
Children (yes)	0.93 [0.24 - 3.54]	1.06 [0.31 - 3.59]	1.19 [0.51 - 2.77]
Religion (yes)	1.70 [0.52 - 5.59]	1.94 [0.50 - 7.54]	1.30 [0.52 - 3.26]
Social activities (one)	1.34 [0.32 - 5.65]	1.96 [0.30 - 12.69]	0.95 [0.20 - 4.43]
Social activities (two or more)	2.79 [0.65 - 11.95]	4.86 [0.83 - 28.46]	1.43 [0.36 - 5.66]

3.4 Association Between Classes and Outcomes

Findings from the final logistic regression (**Table 3**) supported the hypothesis that class membership may be differentially associated with the likelihood of students presenting suicidal ideation, depressive symptoms, risky behaviors, and lower academic achievement. In other words, results suggest the existence of students' subgroups with similar characteristics regarding academic adjustment and mental health that can be associated with suicidal ideation, depressive symptoms, risky behaviors, and lower academic achievement.

Table 3. Associations between class membership and outcomes. 'Ordinary' as reference

	OR [95%CI]			
	Suicidal Ideation	**Depressive symptoms**	**Low academic achievement**	**Risky behavior**
Psychologically distressed	7.90 [1.94 - 32.22]	28.77 [6.43 - 128.75]	1.64 [0.15 - 18.16]	1.63 [0.90 - 2.94]
Binge drinkers	0.83 [0.14 - 4.93]	3.08 [0.54 - 17.52]	1.87 [0.12 - 29.13]	1.23 [0.70 - 2.16]
Dissatisfied	8.12 [2.27 - 29.02]	13.63 [3.47 - 53.59]	3.26 [0.44 - 24.22]	1.85 [1.00 - 3.40]

As shown, the odds ratio for SI and DS was higher among psychologically distressed (SI: OR=7.90, 95%CI = 1.94 - 32.22; DS: OR = 28.77, 95%CI = 6.43 - 128.75) and dissatisfied students (SI: OR=8.12, 95%CI = 2.27 - 29.02; DS: OR = 13.63, 95%CI = 3.47 - 53.59). It is noteworthy, however, that the CIs are too large, which hinders the accuracy of estimates. Dissatisfied students also presented a higher likelihood of engaging in risky behaviors (OR=1.85, 95%CI = 1.00 - 3.40). There was also a marginally significant association between psychologically distressed and risky behavior (OR=1.63,

95%CI 0.90 - 2.94). There was no difference among classes regarding academic achievement.

Discussion

Suicide ideation and depressive symptoms prevalence

In the present study, we identified subgroups of undergraduate students using LCA regarding academic adjustment and mental health. As far as we know, no similar study has been conducted in Brazil with a representative sample of college students. The prevalence of suicide ideation found in our study (5.9%) was lower than the pooled prevalence of STB (9.1%) found by a recent meta-analysis of previous studies with Brazilian college students' samples (Demenech et al., 2021). However, direct comparisons cannot be guaranteed, considering that STB is a broader outcome than SI. It is reasonable to expect lower prevalences when using narrower outcomes. Additionally, less than a third of studies about Brazilian college students used probabilistic sampling strategies, and most were restricted to medicine students (Demenech et al., 2021), which might lead to overestimations. Regarding depressive symptoms, we found similar prevalence (25.7%) from the pooled prevalence found in Demenech's (2021) study (28.5%). It is noteworthy that to evaluate depressive symptoms, most studies about Brazilian undergraduate students used the same instrument as our study, which makes the comparison more reliable for this outcome than for SI. The lack of standardized definitions, tools, and measures, combined with limited sample sizes, hinder cross-study comparisons and highlight the need for comprehensive and representative research on suicide among college students (O'Connor and Nock, 2014).

Latent Class Analysis

We found no comparable study that investigated subgroups of undergraduate students combining academic and mental health indicators. Some previous studies investigated subgroups of youth regarding mental health and substance use indicators, (Nelon et al., 2019; Gilreath et al., 2019). Even so, most studies investigate subgroups of students using mental health indicators exclusively (Bernanke et al., 2017; Marraccini, et al., 2020; Wong et al., 2020). It is noteworthy that mental health definition embraces more

than just the absence of mental disorders symptoms. Mental health is regarded by WHO as a "state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community" (WHO, 2022). Considering that mental health is not defined solely by mental disorders' symptoms, we sought to combine indicators that are associated with students' mental health in previous literature, such as academic, psychological distress, and substance use indicators (Ross; Niebling; Heckert, 1999; Kessler et al., 2005; Hansen and Lang, 2011; Beiter et al., 2015; Mortier et al., 2015; Auerbach et al., 2016; Duffy et al., 2020; Sheldon et al., 2021).

Our results indicate that both academic life and mental health aspects can be combined to identify students in different subgroups. In our study, the 'Dissatisfied' class represented a minor proportion of students, while at least one in four students is under psychological distress.

Suicide Ideation

Depressive Symptoms

Risky Behavior

Limitations

Despite LCA being an effective statistical technique, it has some limitations. Because class assignment is based on probabilities, it is not possible to precisely determine the exact number or proportion of members in each class. Furthermore, there is the risk of "naming fallacy" (Weller et al., 2020), once researchers are responsible for naming the identified classes, which might not always reflect class membership with accuracy. Additionally, as our sample was recruited from state capitals, herein stated findings might be generalized solely for students living in urban areas. Although the questionnaire was built using reliable and validated instruments, recall errors and information biases cannot be discarded when using self-administered questionnaires. Additionally, because respondents may be reluctant to disclose sensitive or embarrassing facts such as drug use and suicide-related questions, responding bias should not be excluded. Since data collection - in 2009 - college students' characteristics have changed,

indicating an urgency for updated studies with representative samples addressing students’ mental health. Finally, the cross-sectional design does not allow causal inference on associations with studied outcomes. Despite these limitations, our analyses were conducted to minimize its impacts, and our findings allowed us to depict subgroups of students facing difficulties during academic life.

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6.3 Apêndice 3. Teaching Suicide Prevention: Experiences from a Social-Ecological Approach.

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Chapter 29
Teaching Suicide Prevention: Experiences from a Social-Ecological Approach

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This chapter discusses the teaching opportunities and strategies embedded in the planning and implementation of health promotion projects targeting suicide prevention in the university context. The perspective adopted is that of an informal advisory group nestled in the psychology school clinic at the University of Brasília (UnB) in Brazil. Our group operates on two fronts. In an advisory capacity, we help schools within the university conduct a comprehensive collaborative assessment to identify and map out local determinants of suicide risk and protection in tandem

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with assisting executive academic coordinators in any matters pertaining to suicide prevention. In a formative capacity, we conduct mental health awareness and health promotion skill-building activities with the schools and provide in-service training to junior psychologists[1] in suicide prevention and health promotion.

Our group is called *Grupo Entrelinhas*. In Portuguese, *entrelinhas* means between the lines, a nudge to the notion that suicides communicate, albeit tragically, that which is not being ordinarily heard or spoken. We believe that suicides should be seen not only as signs of individual and familial suffering but also, and importantly, as byproducts of overarching socioeconomic and cultural structures, with historically developed mechanisms of power and oppression that materialize in unhealthy environments and relationships. To advance general quality-of-life strategies, social equity, and health education is thus an integral part of suicide prevention.

Historical Background

Suicide is the second leading cause of death among youth aged 15 to 29 years old worldwide (World Health Organization [WHO], 2019). In Brazil, 13,520 suicides were registered in 2019 alone, of which more than 28% (3862) occurred in the 15- to 29-age group, an increase of over 39% compared to the number of suicides in this age group in 2009 (SIM/DATASUS, 2009–2019). Some estimates indicate that every suicide may affect upward of 100 people, and suicide-exposed individuals report suicide ideation at almost double the rate of unexposed individuals (Cerel et al., 2019).

Grupo Entrelinhas was launched in early 2018 after several suicides were identified in the student body at the university over the preceding 2 years. Although in UnB a public unifying dataset of student suicide behavior (here understood as attempts and deaths) is unavailable, according to newspapers at least five departments within the university experienced student suicides (Antunes, 2018). In the same period, an apparent growth tendency in student suicide behavior throughout the country also made headlines (Cambricoli & Toledo, 2017).

A nationwide survey reported deteriorated mental health among college students, with over 80% facing varying degrees of emotional problems, 60% reporting anxiety, and 8.5% reporting suicide thoughts, a percentage of suicide ideation that more than doubled in relation to the previous survey, 4 years earlier (FONAPRACE, 2019). This growth tendency is not specific to Brazil; increased demand for student counseling services has been identified internationally (AUCCCD, 2019).

This data highlights the widespread prevalence of suicide behaviors and ideations among the university student body in Brazil and the pressing need for a coordinated and effective effort in mental health promotion in higher education.

[1] In Brazil, those are typically holders of a degree in a five-year undergraduate course in psychology

Challenges Faced In light of several suicides in the student body, hundreds of students potentially affected, and the impossibility and inadequacy of providing mental health care in the traditional individual session model, the challenges our group faced were trifold:

- Empowering university communities to take ownership and agency over the factors influencing their mental health,
- Delivering widespread first-tier mental health care focused on promoting and solidifying suicide protective factors, and
- Immediately supporting multiple individuals in grieving, attempting to prevent suicide contagion, and identifying those at an increased risk of worsening mental health status, while avoiding burnout of understaffed mental health professionals.

Crises as a Gateway to Approach Mental Health Promotion

Grupo Entrelinhas' effort focuses on signaling the need to rethink response strategy to suicides in university communities. The group's overarching approach is to enhance the general level of wellness in the university's communities by encouraging health consciousness in all daily activities. Instead of reacting with large-scale mobilizations following a suicide crisis, our group advocates identifying and changing general underlying processes that might be contributing to worsened mental health status. Furthermore, our interventions aim to acknowledge and strengthen skills already existing within the university's communities, thus empowering all to take ownership and agency over the betterment of their mental health.

In this sense, our work philosophy is fully aligned with the Ottawa Charter for Health Promotion (WHO, 1986) in the action guidelines of strengthening community action, developing skills, creating supportive environments, and reorienting health services.

Workflow Our services are requested by academic coordinators within the university who identify a mental health demand in their student, faculty, or technical body, usually following either a suicide or suicide attempt.

Our first approach is supporting academic coordinators in handling and communicating about initial aspects of the crisis. We then offer group suicide postvention interventions to bereaved school communities. Our postvention protocol involves active search of affected peers.

In terms of reach, at least 143 people participated in a total of 8 targeted postvention actions from April 2018 to November 2020. These interventions were met with very positive reactions and serve as a gateway in inviting schools' decision makers to engage in health promotion and suicide prevention planning.

Once an academic coordinator signals interest in creating a suicide prevention plan for their school, we begin by carrying out a comprehensive and participative

mapping of the school's situation regarding any factors that might play a role in the current mental health status of the group. We call this process a Situational Diagnostic. We are oriented by an overarching social-ecological framework to health promotion (Bartholomew et al., 2006) that recognizes an interplay of individual, interpersonal, organizational, environmental, societal, administrative, and political characteristics influencing mental health. Relationships between these levels are complex and reciprocal. The Diagnostic aims to identify, in the target community, these various influences, as well as specific demands for training in psychological competencies and skill sets.

We begin by conducting interviews with the academic coordinators, followed by separate focus groups with professors, technical staff, and student representatives. If additional interest groups are identified, such as black students or women empowerment groups, their representatives are invited to interviews. These initial talks aim to identify the communities' challenges, barriers, needs, and good practices regarding mental health. It is an effort in giving voice to every stakeholder.

We then review the school's official website and material from open social media accounts linked to the course. The website reviews intend to identify ease of access to information on health services available to students and on important academic rules, occurrence of language insensitive to minority groups, and confusing or otherwise unsuitable communication styles. The social media accounts are browsed to identify both the general mood of the school's communities as well as recurring mental health themes. In addition to this document analysis, we also visit the school buildings.

Collected data are organized and presented as a mind map illustrating every issue identified by the communities' stakeholders, document analysis, and environmental visit. Data are clustered by type of issue and interest group, and related, when possible, to suicide protective factors and risk factors. A mind map is an interesting tool as it allows the portrayal of complex relationships. In the same mind map, we include a proposal of actions, both punctual and continuous, revisional and propositional, aimed at promoting that communities' mental health by strengthening and encouraging new protective factors and minimizing the risk factors to suicide and barriers to mental health. We signal which of these actions can be carried out by our group and indicate which services, people, or places can be sought out for the others.

This final assessment format was developed over a couple of years and began to be implemented in 2019 with four pilot schools within the university. The huge scope of this work means that only very few schools can be assisted at the same time. However, it has the potential benefit of empowering communities to gain ownership over their processes and effectively target areas for change.

Figure 29.1 describes Grupo Entrelinhas' workflow in five stages: First encounters, Work proposal, Situational Diagnostic, Diagnostic feedback presentation, and Implementation. Each stage is subdivided into actions. The relationships of each action to the health promotion core competencies applicable are displayed.

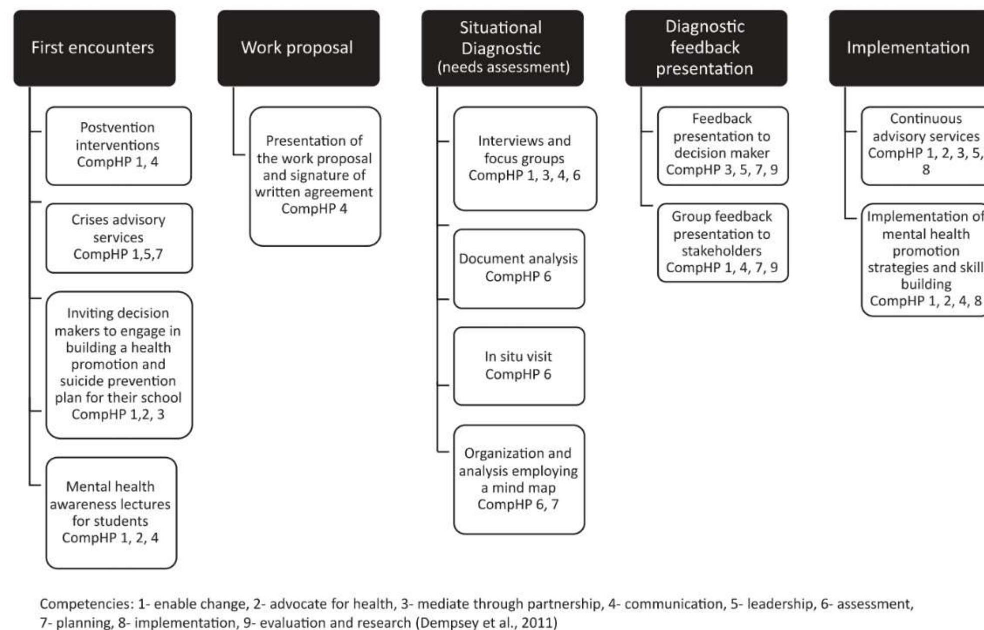

Fig. 29.1 Description of Grupo Entrelinhas' workflow

Teaching Opportunities, Practices, and Strategies

Our work yielded two categories of teaching opportunities. The first concerns the in-service training of four junior psychologists who joined us from October 2019 to October 2020. The objective was preparing them, through active learning methodologies, to plan and implement health promotion interventions linked to suicide prevention. The second group of teaching opportunities was embedded in *Grupo Entrelinhas*' interventions with school communities.

Teaching Junior Psychology Interns

All four interns were psychologists but differed in their clinical backgrounds: cognitive behavioral psychotherapy, psychodrama, psychoanalysis, and body-oriented psychotherapy. They were two women and two men, ranging in age from 27 to 58, all with little clinical experience.

Interns assumed diverse roles throughout the year. They were required to participate in a weekly general meeting. This meeting alternated between literature review discussions, skill-building sessions (for clinical interventions and self-care), group-building exercises, simulations, mock project presentations, and general coordination sessions. Interns acted as primary therapists in up to three cases each,

participated in a weekly group case supervision session and as observers in some awareness lectures and data collection sessions. Part of the group additionally participated as cotherapists in delivering skill-building sessions.

Active learning methodologies were prioritized in training, building from junior psychologists' previous declarative and procedural knowledge of case management for at-risk patients, assessed by an interview and case study during the hiring process. We will now turn to the main categories of activity.

Simulation: Suicide Awareness Talk

Interns had to prepare and deliver a suicide awareness talk and support material geared toward university professors. They delivered this talk to the senior psychologists in *Grupo Entrelinhas*, who role-played as faculty varying in degrees of acceptance toward the activity. Interns had to manage the technical aspects of the talk (risk and protective factors of suicide), their general standing as speakers, and their delivery to an audience with mixed acceptance toward mental health issues. The main compHP competencies targeted were communication, advocate for health, and implementation, the latter related to developing appropriate resources and materials (Dempsey et al., 2011).

Mock Project: Mental Health Question Box

Interns were asked to devise a way to collect and answer mental health-related questions posed by the community. They were asked to think about two options for collecting the questions: online and in situ. The specific competency domain targeted was Planning (Dempsey et al., 2011). Interns worked as one group and presented both options to senior psychologists as if they were presenting to schools.

For the in situ scenario, they opted for a physical box to be left at schools and later collected. Concerns were balancing visibility and privacy of the boxes, rendering them tamper-proof, organizing a timescale for their retrieval, discouraging prank questions, thinking of a proper forum for answering the questions, and managing crisis scenarios.

For the online situation, they opted for a question box in Instagram stories, with a 24-hour viewing period. Additional specific concerns of this modality were related to the organization of response by the interns while using a single Instagram account, especially if it attracted a lot of traffic.

This activity was carried out in early 2020. A subsequent trial run was not possible due to COVID-19 pandemic onset.

Suicide Prevention Environmental Intervention

In Brazil, suicide awareness campaigns are commonly held in September. In 2019, *Grupo Entrelinhas* decided to modify the psychology school clinic's waiting room with an intervention consisting of a string web high over the chairs, from which colored cards hung. Cards carried poems, music lyrics, and quotes linked to hope, resilience, and self-acceptance. At the end of the month, the school clinic's regulars were invited to take a card and either keep it or gift it to someone else. Junior psychologists participated in choosing the sayings for the cards and setting up the physical intervention. Health promotion competency domains involved were communication and implementation, especially regarding the necessary care in handling cultural aspects of interventions in spaces occupied by multiple people.

Skill Building

Most skill-building sessions were integrated with clinical supervision sessions and involved role-playing the management of crises encountered with patients during the previous week. Detailed feedback, reinforcement, and role models were provided regarding the delivery of specific clinical strategies such as anger and impulsivity control, assertive communication, grounding techniques, and relaxation and breathing exercises. Interns were invited to reflect on their emotional process during the handling of crises and when receiving feedback. This attention to emotion is crucial, since self-care is a vital skill for psychologists (Ziede & Norcross, 2020). Specific tool training sessions were also held, with guided practice on using the mind map program and filling out the school clinic's extensive paperwork. This approach to enhancing self-efficacy is grounded on Social Cognitive Theory as applied to the development of skills, which includes the strategies of modeling, guided practice, enactment, verbal persuasion, physiological and affective change, and facilitation (Bartholomew et al., 2006). Importantly, the strategies and techniques were not imparted upon the interns, but rather elicited through Socratic questioning (Paul & Elder, 2007). This process builds on interns' previous knowledge and asks of them an engaged stance.

Group-Building Activities

VIA Survey

The whole group (four interns and five psychologists) individually filled out the 120-item VIA Inventory of Strengths (VIA 120, Brazilian Portuguese version). The VIA Survey is an openly available tool from positive psychology that aims to identify a person's character strength profile. It identifies 24 strengths grouped in 6 virtues (Peterson & Seligman, 2004).

Participants sent the results regarding their five greater strengths and three lesser strengths to the group coordinator, who plotted them on a grid, allowing the identification of the group's general strengths and shortcomings, and giving insight into the potential interplay of profiles and sources of conflict.

The theoretical definition of each strength was shared, as well as what could be expected from their overuse and underuse. The participants then discussed how profiles played against each other and the groups', both in facilitating and hindering communication, and who might better handle which tasks. At the end of the activity, with the participant's permission, the profiles were identified. This was done so that the newly gained awareness could be directly applied to real situations.

Specific compHP competencies (Dempsey et al., 2011) were enabling change (specifically regarding the enhancement of personal skills) and leadership. Interns felt the exercise was relevant to their self-knowledge.

NASA Exercise: Survival on the Moon Scenario

From the group coordinator's perspective, a major turning point for the group's cohesiveness was the NASA exercise "survival on the moon scenario" (NASA, 2006). Participants are asked to imagine they are members of a space crew that experienced a malfunction and now have only 15 objects that survived a crash landing. They have to travel together on the moon's surface to reach a mother ship with only these objects, or all die. The exercise involves ranking the surviving objects in order of importance, first alone, then reaching a group consensus, and then comparing these rankings to NASA specialist rankings. Processes involved in negotiation of the group response are then discussed, allowing participants to have direct feedback on how they act in group settings and the consequences. This exercise targets both communication and leadership competencies (Dempsey et al., 2011).

It is noteworthy that the participants themselves apparently saw less of an effect of this exercise in the subsequent group dynamics than what the senior psychologists perceived.

This exercise can be understood as an adaptation of the interactive method commonly referred to as "think-pair-share" collaborative learning strategy. This strategy promotes individual accountability and group processing, uniting intellectual and interactional aspects of learning (Sharma & Saarsar, 2018).

Feedback Assessment from the Interns

At the end of their contract, interns answered a 12-question survey with open-ended and closed questions. They were asked to rate on a 5-point Likert scale their agreement regarding affirmations about 15 characteristics of their behavior and performance during activities and eight items about the contribution of the internship to

their careers and skills. They also rated the internship from 1 to 10. In addition, they were asked to write about the biggest challenge they successfully faced, which issues remained challenging in the management of suicidal patients and suicide prevention, what they thought about the activities of the situational diagnostics, and which activities from the internship they least and most liked, and why. They were also asked if they had any suggestions about the activities, whether they would recommend the internship to other people, and what they thought about the size of the group.

Interns indicated that the internship contributed to their professional qualification and clinical practice and that they felt safer in managing cases with suicidal risk. They also appreciated the novelty of the learning opportunity provided by their participation in the situational diagnostic stages.

Teaching Opportunities while Working with University Communities

Mental Health Awareness Lectures for Students

The breadth of health services available to university students is frequently not known by them. *Grupo Entrelinhas* has a standard "stress and self-care" lecture aimed at first-year students. It is divided into four parts: (1) university's student support network and services, (2) reflection on what makes one's life worthwhile and the role the university plays in this process, (3) quality of life and stress physiology, and (4) stress management exercises. Before the exercises, students take a measure of their respiratory rate and are instructed about anxious breathing patterns. Then they practice basic exercises that teach relaxation: breathing, face relaxation, and imagery visualization. Lastly, students are presented with an assortment of mental health apps and online resources, and general guidelines about types of issues that benefit from talking to a therapist. Students are encouraged to follow the psychology school clinic's Instagram, which advertises free mental health events, services, and materials.

This lecture has been delivered to over 300 students from at least six schools within the university. It is aligned with the World Health Organization's understanding that mental health awareness and knowledge of how to access mental health services are important strategies of suicide prevention at the universal level (WHO, 2014). One of the objectives of the lecture is to normalize help-seeking behavior, especially as there is evidence indicating that help-seeking is not necessarily seen as important by people with recent ideations (de Luca et al., 2019) and is hindered by self-reliance, social stigma, and treatment fears (Michelmore & Hindley, 2012). We also act with the understanding that strategies for mental health support may not be well known by the school's faculty and staff.

Skill Building: Public Speaking Workshop

A public speaking workshop was offered in November 2019. Oratory was chosen as an initial theme due to the high impact that communication anxiety has on students. Since oratory training is not traditionally understood as a mental health intervention, we also felt it would be better received by students and offer a safe entry into aspects of self-care.

There is evidence that fear of public speaking is prevalent worldwide, with reports as high as 63.9% in Brazilian university students (Marinho et al., 2017). Public speaking anxiety can negatively impact learning and social interaction (LeFebvre et al., 2019). The oratory workshop aimed to develop a higher sense of self-efficacy in communication skills so that students could better manage their anxiety and deliver required public speeches.

The workshop was structured in five weekly modules: (1) challenges of public speaking and voice characteristics, (2) planning and structuring presentations and the use of PowerPoint, (3) improvisation and speech fluidity, (4) the use of emotions in speech, and (5) debate cycle and final presentation. The overall focus was on enhancing stage presence in speech delivery, and diminishing stage fright.

Sessions were heavily reliant on group work and shared feedback. Contents were developed through fun, hands-on group activities that required participants to interact, try out new skills, make mistakes, loosen up, and integrate body movement, facial expression, and speech. Since the overarching idea was to foster ease in speaking to an audience, most of the exercises' actual content was either pop culture, funny, nonsensical, or otherwise not serious. For example, in a round of debates between two participants, the debate topic was "which creature is the most dangerous?" Debate pairs were: medusa or mermaids, Santa Claus or the Easter Bunny, pirates or ninjas, and zombies or werewolves. The use of this type of content in exercises guarantees a relaxed and explorative atmosphere. Conversely, the final presentation simulated an actual speech students had to deliver that semester. Exercises were recorded, and participants had access to the videos of their performances, with individualized feedback.

The group was composed of nine participants: the main instructor, an assistant, and seven students from different schools in the university. An additional assistant participated in specific modules. Both assistants were interns.

Feedback on the workshop was overwhelmingly positive. The evaluation asked participants to write their thoughts on the explanations and exercises for each module, and any suggestions. They also evaluated the instructor and aspects of the group format of the activities. Respondents indicated they were interested in continuing this activity should advanced modules be offered and they would recommend it to others, some already had. All indicated improvements in outcome such as feeling calmer when speaking in public, not being so afraid of making mistakes, dealing better with insecurities, gaining more control, better posture and movement on stage, dealing better with possible blanks when speaking, modulating voice, dealing

better with agitation and unease, and generally feeling their speaking abilities improved. One month after the end of the activities, one participant informed us the workshop had been instrumental in securing a position in the job market. The onset of the COVID-19 pandemic curtailed the implementation of further group activities.

Community Welcome and Networking Workshop

In 2012, the university banned violent or humiliating student hazing. Student veterans and academic centers have increasingly relied on get togethers, sport and play activities, or socially responsible activities as a substitution. From the initial situational diagnostics, we noticed that schools struggled with students who had difficulty fitting in with the group. Considering that lack of social connectedness is recognized as a risk factor for suicide (Poland & Ferguson, 2021), we decided to offer a workshop tailored to student union members who are frequently in charge of welcoming first-year students. The idea was to instrumentalize these students in using group activities to integrate newcomers while still being fun. Besides experiencing firsthand the suggested activities and resources, students also discussed a rationale for each activity.

Participants were 12 student union members from different schools. Their impression was that the workshop offered them structure, organization, and a theory basis in thinking of humane strategies for greeting newcomers. They also thought it a new and welcome space for exchanges between students' representatives from different schools.

Psychological Advisory Services for Academic Coordinators

Since most schools solicit our services following a student suicide or attempt, our group's first activities are postvention interventions and crisis management, such as advising the academic coordinator on how to handle communication, spontaneous and formal tributes, memorials, and gatherings. Avoiding suicide contagion is a pressing concern. A timely and respectful approach to these situations is paramount.

Following crises, schools are permeable to difficult talks about mental health needs. From the point of view of a school's decision maker, under the theoretical standpoint of the Health Belief Model (Champion & Skinner, 2008), you could say a student suicide is a powerful cue to the action of addressing students' mental health concerns. Additionally, the perceived susceptibility to and perceived severity of the problem are high. The perceived benefits of action are also high and the perceived barriers are momentarily lowered, as there is a general sentiment of avoiding further suicides at all costs. A challenge is related to a possible low self-efficacy of this decision maker, as the worst possible outcome may have already happened.

One of the main characteristics in conducting the Situational Diagnostic is the effort to actually understand how the problem presents locally and to identify the specific determinants before proposing solution strategies. Although the benefits in doing so are self-evident, we must recognize the heightened level of pressure felt by decision makers who need to rapidly respond to mental health incidents in their community, which frequently leads to the implementation of general mitigation strategies that are not tailored to their department needs. This in turn may lead to a low level of community engagement in such strategies and a general feeling of helplessness. Reassuring school's deans, department chairs, and executive academic coordinators of the importance of this assessment prior to the commitment to a specific course of long-term action is a laborious and necessary process that directly touches on issues of leadership and communication, both for the health intervention team and for the decision maker.

Situational Diagnostic

In the second semester of 2019, four schools signed with *Grupo Entrelinhas* to plan and implement a suicide prevention program tailored to their realities. When the COVID-19 pandemic began, the situational diagnostics of two schools had been completed and were in the early stages of the feedback loop. The other two were still in different stages of data collection. Important initial reactions and responses were identified.

During the feedback meetings, we noticed that one of the main benefits of the mind map was prompting individuals to understand poor mental health as a common challenge that all stakeholders were facing together, but that expressed itself differently across groups. It allowed each group to confront their responsibilities in the dynamic and their blind spots in evaluating the problem, and to recognize potential areas for positive contributions.

Throughout the situational diagnostic stages, changes were already taking place. Schools began reconsidering quality-of-life interventions dropped over the years and discussing the possibility of forming mental health working groups or having specific professors who could be mental health references for students. With better communication, management corrected minor maintenance issues that influenced staff's feelings of personal safety. One school organized a faculty meeting to talk about risk and protection factors for suicide. Activities that empower people in gatekeeper roles, such as professors in university settings, to better identify risk and counter misinformation are necessary (Poland & Ferguson, 2021).

Throughout the year, we also noticed a general rise in interest in the group's work. Staff from another sector of the university requested guidance on conducting a similar situational diagnostic on their premises. Professors and students heard about the work and approached us wishing to enhance suicide prevention in their schools. Other universities invited us to deliver lectures in suicide prevention.

The COVID-19 pandemic brought the diagnostic activities to a standstill and suspended all in-person activities indefinitely. In light of the limitations, *Grupo*

Entrelinhas decided to focus more closely on training professionals and offering emotional support for the community. Interns provided fixed hours for telephone and video calls, in the fashion of a helpline. Additionally, an 8-hour online training on suicide prevention was elaborated and offered to recently graduated psychologists. The group also launched a booklet entitled Suicide prevention: initial guidelines for university professors.

Media Coverage

To assess *Grupo Entrelinhas*' reach over time, we searched for all of the group's Google mentions from February 2018 to March 2021. *Grupo Entrelinhas* was mentioned 34 times in digital media posts, pages, and articles, from university pages and local media to national media vehicles, excluding pages directly linked to the group and group member profiles.

Of these mentions, we highlight 18 newspaper articles, 14 of which were the reproduction of the same article by different vehicles, suggesting the importance and scarcity of initiatives in this area.

Challenges and Obstacles Encountered

Grupo Entrelinhas is founded and run exclusively by psychologists who are staff and not faculty at the University of Brasília, incurring in legal and structural limitations on autonomy, funding and engagement of talents, as well as encountering additional bureaucratic hurdles.

Another general issue concerns the difficulty in obtaining and generating good quality data regarding suicides, suicide attempts, and interventions. Data baselines are often missing. There is widespread underreporting (Tøllefsen et al., 2012). This is not specific to our context; rather, it is a common occurrence and may be linked to various cultural, religious, social, and legal reasons, particular to deaths by suicide (Naghavi, 2019). Potentially unreliable and missing data are an obstacle in assessing the effectiveness of suicide prevention programs.

Obtaining outcome and impact data following suicide prevention and especially postvention interventions is particularly difficult, as the subject matter is very mobilizing, and populations involved may be in an extremely vulnerable position. Careful planning of and previous agreement on data collection points might circumvent some of these difficulties.

Challenges Related to the Internship

A major challenge is that the intern position is not paid and, as such, competes with remunerated activities. The unpredictability of the schedule for the community interventions is another difficulty. Postventions are by nature emergencies, and the diagnostic process's steps rely on the communities' availability, making scheduling and transportation planning challenging, especially as interns commonly live far away from the university. Interns' low computer literacy and working knowledge of the English language are also hindering issues.

Challenges Encountered while Working with School Communities

Academic coordinators usually serve a two-year term. Health promotion continuity in the face of frequent change within the schools is a challenge and relies heavily on political will. One possibility of addressing this difficulty is having either a work-group or a specific faculty member acting as a mental health liaison, undeterred by changes in management.

At the feedback meeting, the health team must pay close attention and intervene to dissuade unhealthy developing dynamics, such as invalidation of specific group's perceptions or scapegoating. Four guidelines curb these occurrences: (1) the decision maker who initially requested the assessment should be debriefed separately and thoroughly a few days before the meeting; (2) more than one representative of every group that participated in data collection must be present at the feedback meeting. Should the meeting not take place, all stakeholder representatives get a copy of the report; (3) the health promotion team clearly communicates the procedures and scope of the data collection carried out, including whole groups that may have opted out of participating; (4) group perceptions are presented as such, there is an absolute protection of precisely who said what. A successful feedback meeting is invaluable in promoting an integrated understanding of the multiple factors influencing mental health status in the school and in promoting a joint effort of all stakeholders, different as they are, in tackling the problem together, instead of assigning outside blame. This process is an opportunity to promote the competencies of enabling change and mediating through partnership in communities (Dempsey et al., 2011).

Although there are many challenges, our work so far has been welcomed by the university communities and administration. We hope that the experiences described in this chapter may inspire other initiatives in suicide prevention in university settings.

Table 29.1 brings our reflection on the six triggering questions suggested by the Editors.

Table 29.1 Authors´ reflections on the six triggering questions suggested by the Editors

Questions	Take-Home Messages
What is our vision about HP?	We adopt a social-ecological approach to health promotion, where contributions to any issue arise from the interplay of individual, relational, organizational, environmental, and societal/cultural influences. Our vision is that health promotion will become an integrated transversal topic in every area of knowledge, empowering different professions to contribute to overall health with their specificity. Planning health promotion programs, on the other hand, is a specific skill geared toward the health sciences, whose practitioners should work in close collaboration with decision makers.
What is the institutional and political context of your experience (participants, professions and courses involved, duration, and frequency of activities)?	We work on two fronts: Training junior psychologists and working directly with university students and schools in the delivery of suicide prevention services. On the one hand, we provide junior psychologists with 1 year of in-service training in suicide prevention, as well as planning and implementation of health promotion projects. On the other hand, schools may request a targeted service of suicide postvention and suicide prevention planning, where strategies for mitigating risks and amplifying protective factors are tailored to their reality after a careful diagnostic process. We also work directly with university students in providing group mental health awareness activities, skill-building activities, and network-building activities. Across all activities, *Grupo Entrelinhas* reached members of at least 22 schools: Accounting, Administration, Agribusiness Management, Agronomy, Chemical Engineering, Computer Sciences, Economy, Forest Engineering, International Relations, Languages, Law, Library Sciences, Medical School, Music, Pedagogy, Pharmacy, Physical Education, Physics, Psychology, Social Sciences, Veterinary Medicine.
Which theories and methodologies are used in the teaching-learning process?	Our overarching framework for understanding health promotion is a social-ecological model. Other theories, such as the Health Belief Model and Social Cognitive theory, may inform interpretations regarding specific processes of individual decision making and skill building. For the psychologist's training, we use active collaborative learning methods such as problem-based learning, simulation, role-playing, and mock projects. Skill-building activities, group-building activities, and group supervision of cases are cornerstones. The work with school communities, especially during the Situational Diagnostic, is oriented by a participatory-action research methodology.

(continued)

Table 29.1 (continued)

Questions	Take-Home Messages
What forms of assessment are applied, results achieved, and challenges faced?	For the junior psychologist's training, we measure outputs and perceived outcomes at the end of their internship through a survey with a mix of open and closed questions. All activities are also continuously assessed verbally throughout the year. With school communities, we measure service outputs, specifically the number of people served per activity, number of activities and services provided, media exposure, website hits, and number of downloads of mental health resources. Skill-building activities have a detailed specific survey that touches on perceived outcomes. At the end of every mental health awareness activity and suicide postvention, there is an informal assessment. Expectations and delivery of advisory services are continuously discussed verbally with school's decision makers. Assessing outcomes and impacts is extremely challenging in the context of suicide prevention and postvention due to the delicate nature of the subject matter and data gaps on baseline conditions.
Which principles, pillars, competencies, or approaches to health promotion do you base your plan of teaching and learning?	With school communities our effort is geared toward enabling lasting change. We seek to promote mental health consciousness, strengthen agency and ownership, develop useful skill sets, promote safe and positive interaction between groups, and encourage collaborative problem solving that fosters understanding of the underlying processes that may generate and maintain negative mental health outcomes. With junior psychologist interns, we hope to instrumentalize them in conducting integrated and participative assessments and interventions tailored to their client's needs and thinking about health promotion and suicide prevention more as a community-based intervention, rather than an individual one. Communication skills, planning skills, group work, and the ability to integrate different viewpoints are essential.
What others could learn with your experience? What is localized and what is "generalizable"?	The planning of specific health promotion programs must be requested and sanctioned by a high-ranking decision maker within the target school, as access to people, places, and resources depends on this. An initial diagnostic of the situation is paramount and must be understood and supported by decision makers. Feedback on the Situational Diagnostic should be given in a group setting, with representatives of all stakeholders present. Continuity is a challenge due to frequent changes in administration. Creating a stable mental health liaison role can perhaps facilitate these adaptations. Group-building activities and self-care are cornerstones for ensuring healthy intervention teams. Training activities should be tailored to culture and individual skill levels. Finally, difficulty in generating outcome and impact data should be expected, especially in light of absent baseline data. Careful planning of agreed-on data collection points may be able to mitigate this problem.

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