MINISTÉRIO DA EDUCAÇÃO

UNIVERSIDADE FEDERAL DO RIO GRANDE

PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS DA SAÚDE

AUTOMEDICAÇÃO E CONSUMO DE ÁLCOOL PRATICADOS POR ESTUDANTES UNIVERSITÁRIOS DO SUL DO BRASIL ANTES E DURANTE A PANDEMIA DE COVID-19

KAROLINE BRIZOLA DE SOUZA

RIO GRANDE, 2025

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Tese apresentada ao Programa de Pós Graduação em Ciências da Saúde da Universidade Federal do Rio Grande, como requisito parcial à obtenção do título de Doutora em Ciências da Saúde.

Orientador(a): Prof(a). Dr(a). Mariana Appel Hort

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Sumário

Resumo

A pandemia de COVID-19 provocou profundas mudanças no comportamento e na saúde da população, impactando especialmente os estudantes universitários. Neste estudo objetivou-se avaliar como a prática de automedicação e o consumo de álcool por parte dos estudantes universitários residentes na região Sul do Brasil e como a pandemia influenciou estes fatores. Inicialmente, foi realizada uma revisão bibliométrica acerca da temática de automedicação em estudantes universitários através da pesquisa das palavras-chave “self-medication” e “university students” na base de dados Web of Science e análise bibliométrica dos 98 artigos selecionados realizada no software Vosviewer versão 1.6.20. Além disto, foi realizado um estudo transversal entre julho e novembro de 2020 com estudantes universitários da região Sul do Brasil através da aplicação de questionário online contendo perguntas sociodemográficas, de saúde e estilo de vida referentes aos períodos antes e durante a pandemia de COVID-19. Mil quinhentos e cinquenta e três estudantes participaram da pesquisa e os dados coletados foram analisados e deram origem a dois artigos e um manuscrito. Entre os resultados obtidos na revisão bibliométrica sobre automedicação e estudantes universitários nossos achados demonstraram um crescimento no número de publicações a partir do ano de 2019 Arábia Saudita, Paquistão e Brasil são os países com o maior número de publicações na temática e a China o país com o maior número de citações. Acerca dos resultados obtidos através do estudo conduzido com universitários estão a redução da prática de automedicação durante o período da pandemia de 97,2% para 57,2%, consumo de álcool praticado por 99,63% dos estudantes, sendo o consumo semanal o mais frequente, e um aumento no consumo reportado por 248 participantes. Ademais, também foi identificado que estudantes mais novos (18 a 29 anos) e aqueles que se dedicavam somente ao curso de graduação apresentaram mais diagnóstico positivo para COVID-19. Os resultados indicam que a pandemia de COVID-19 impactou significativamente os hábitos de saúde dos estudantes universitários, com redução da automedicação e aumento do consumo de álcool. Esses achados sugerem mudanças no comportamento frente ao isolamento e às incertezas do período. A revisão bibliométrica revelou crescente interesse global sobre o tema, destacando a relevância científica e social da pesquisa.

Palavras-chave: automedicação, consumo de álcool, estudantes universitários, COVID-19, pandemia.

Abstract

The COVID-19 pandemic caused profound changes in the behavior and health of the population, especially impacting university students. This study aimed to evaluate self-medication practices and alcohol consumption among university students residing in the Southern region of Brazil, as well as how the pandemic influenced these factors. Initially, a bibliometric review on the topic of self-medication among university students was conducted by searching the keywords “self-medication” and “university students” in the Web of Science database, and a bibliometric analysis of the 98 selected articles was performed using VOSviewer software, version 1.6.20.

In addition, a cross-sectional study was carried out between July and November 2020 with university students from the Southern region of Brazil through an online questionnaire containing sociodemographic, health, and lifestyle questions referring to the periods before and during the COVID-19 pandemic. One thousand five hundred and fifty-three students participated in the survey, and the collected data were analyzed, resulting in two published articles and one manuscript.

Among the results obtained from the bibliometric review on self-medication and university students, the findings demonstrated an increase in the number of publications from 2019 onwards, with Saudi Arabia, Pakistan, and Brazil being the countries with the highest number of publications on the subject, and China being the country with the highest number of citations.

Regarding the results obtained from the study conducted with university students, there was a reduction in the practice of self-medication during the pandemic period from 97.2% to 57.2%, alcohol consumption reported by 99.63% of students, with weekly consumption being the most frequent, and an increase in consumption reported by 248 participants. Furthermore, it was also identified that younger students (18 to 29 years old) and those exclusively dedicated to undergraduate studies presented a higher rate of positive COVID-19 diagnosis.

The results indicate that the COVID-19 pandemic significantly impacted the health habits of university students, with a reduction in self-medication and an increase in alcohol consumption. These findings suggest behavioral changes in response to isolation and the uncertainties of the period. The bibliometric review

revealed growing global interest in the topic, highlighting the scientific and social relevance of the research.

Keywords: self-medication, alcohol use, university students, COVID-19, pandemic.

Lista de tabelas

Manuscrito 1

Artigo 1

Artigo 2

Manuscrito 2

Lista de figuras

Manuscrito 1

Artigo 2

Manuscrito 2

Lista de abreviaturas e siglas

ABRAFARMA – Associação Brasileira de Farmácias e Drogarias

ANVISA – Agência Nacional de Vigilância Sanitária

COVID-19 – *coronavírus disease* 2019

FDA – *Food and drug administrarion*

IC95% - Índice de confiança de 95%

OMS – Organização Mundial da Saúde

SUS – Sistema Único de Saúde

1. Introdução

Declarada no dia 11 de março de 2020, a pandemia de COVID-19 foi responsável por bruscas modificações no cotidiano da população mundial. Com a fácil disseminação do vírus SARS-CoV-2, responsável pela COVID-19, tornou-se necessário o uso constante de máscaras faciais, a higienização das mãos, objetos pessoais e alimentos, e a adoção de medidas de distanciamento social visando prevenir a transmissão da doença. Além disto, a variabilidade de respostas à infecção na população junto da crescente de casos e óbitos tornou a COVID-19 o tópico predominante de discussões científicas, divulgação de mídia e preocupação da população em geral (CDC, 2024; Ludwig; Zarbock, 2020).

Assim, a busca por medidas farmacológicas de tratamento ou prevenção emergiu com força e velocidade. Alguns medicamentos já comercializados e com segurança estabelecida tornaram-se protagonistas na mídia mesmo sem comprovada eficácia (Ministério da Saúde, 2020). Desta forma, o consumo de certos fármacos cresceu sem qualquer protocolo estabelecido pelos órgãos de saúde ou orientação adequada, além do consumo baseado na própria decisão do indivíduo, caracterizando a situação de automedicação (Paumgartten; de Oliveira, 2020)

Acerca da prática de automedicação, para qualquer finalidade, é importante destacar que apesar de ser considerada uma ação de autocuidado, essa atitude pode significar risco e perigo para a população. Apesar do objetivo de o uso de medicamentos ser a eficácia terapêutica, o seu consumo é largamente associado com a ocorrência de efeitos adversos e isso pode impactar na saúde na população, representado um possível problema de saúde pública (Ministério da Saúde, 1998; Domingues *et al*., 2015).

No entanto, a prática da atividade de automedicação vem sendo identificada na população e o público de estudantes destaca-se com uma das prevalências mais elevadas em diversos países (de Souza *et al*., 2025; Domingues *et al*., 2015). Contribuindo com esta característica, durante a pandemia de COVID-19 os estudantes foram uma das populações mais impactadas devido ao distanciamento social implementado, a pausa em diversas

atividades presenciais de educação e aprendizado e o incentivo às aulas remotas como forma de redução de contágio.

Além da prática de automedicação, o consumo de álcool entre universitários também foi um comportamento afetado pela pandemia de COVID-19. O álcool, uma substância psicoativa com potencial de dependência, está relacionado a mais de duzentas condições de saúde e situações de risco como violência, acidentes de trânsito e comportamento suicida (World Health Organization, 2024). Pesquisas realizadas no Brasil apontam o álcool como a substância mais utilizada entre os jovens (Chiapetti; Serbena, 2007; Kerr-Corrêa *et al*., 1999; Pedrosa *et al*., 2011). Embora o consumo de álcool entre estudantes universitários seja visto por alguns autores como um comportamento culturalmente enraizado, a pandemia de COVID-19 pode ter contribuído para ampliar esse hábito, tanto em número de adeptos quanto em frequência e quantidade de consumo (Guerrero-Agenjo *et al*., 2023; Monsalve; Espinosa; Espinosa, 2011).

A realização de um estudo epidemiológico que investigue a prática de automedicação e o consumo de álcool entre estudantes universitários antes e durante a pandemia de COVID-19 é de grande importância, pois permite compreender os impactos que o período pandêmico exerceu sobre os hábitos de saúde dessa população. Os universitários estão inseridos em um contexto de alta pressão acadêmica e emocional, o que pode favorecer o uso inadequado de medicamentos e o aumento do consumo de bebidas alcoólicas como formas de enfrentamento do estresse. Ao comparar os períodos pré e pós-pandemia, é possível identificar mudanças nos padrões de comportamento, fatores de risco associados e possíveis consequências à saúde física e mental dos estudantes. Esses achados fornecem subsídios valiosos para a formulação de políticas públicas, programas de conscientização e estratégias de promoção da saúde que visem reduzir práticas nocivas e incentivar o uso responsável de medicamentos e o consumo consciente de álcool.

2. Revisão bibliográfica

2.1. Automedicação

Definida pela Organização Mundial da Saúde (OMS) como “a seleção e o uso de medicamentos para o tratamento de doenças ou sintomas autodiagnosticados”, a automedicação consiste em uma prática na qual o indivíduo utiliza o medicamento visando adquirir algum benefício próprio (Ministério da Saúde, 1998). Este comportamento inclui a utilização de “sobras” de medicamentos anteriormente prescritos, a compra e/ou o uso de medicamentos sem a supervisão de um profissional de saúde, o consumo de medicamentos de terceiros e, ainda, o consumo de outros remédios como chás e ervas medicinais também sem prescrição ou acompanhamento (Baracaldo-Santamaría *et al*., 2022).

Apesar de ser vista como uma forma de autocuidado e manutenção com a saúde, esta prática pode ser perigosa e ocasionar efeitos negativos (Domingues *et al*., 2015). Ainda que os medicamentos passem por rigorosos testes e só sejam comercializados após apresentarem qualidade, eficácia e segurança comprovadas, é importante destacar que todos, sem exceção, podem causar efeitos adversos ou colaterais mesmo que usados nas doses e posologias especificadas (Domingues *et al*., 2017). Desta forma, deve-se considerar que mesmo o consumo racional de medicamentos, que ocorre mediante uma prescrição após anamnese e consiste na dosagem correta pelo período necessário, pode gerar efeitos indesejados nos pacientes (Domingues *et al*., 2015, 2017; Petrović *et al*., 2022). Ainda, conforme demonstrado no estudo de Sousa e colaboradores (2018) uma ocorrência maior de efeitos adversos relacionados aos medicamentos foi identificada entre aqueles que praticaram a automedicação.

Assim, tratando-se de automedicação, mesmo com o objetivo de alívio e cura, o indivíduo pode prejudicar sua saúde devido ao desconhecimento técnico sobre medicamentos. É importante destacar que a automedicação pode ser praticada com quaisquer medicamentos comercializados e com produtos naturais como ervas, chás etc. (Arrais *et al*., 2016). Deste modo, o uso de doses, intervalos ou formas de administração equivocadas ou mesmo de medicamentos

inadequados ao problema ou ao próprio indivíduo apresenta ainda maior chance de causar um dano à saúde do usuário (Domingues *et al*., 2017).

Nesse contexto, a criação da Lei nº 14.912, de 3 de julho de 2024, representa um marco relevante nas políticas públicas brasileiras voltadas à promoção do uso racional de medicamentos e à conscientização sobre os perigos dessa prática (BRASIL, 2024a). A referida lei altera a Lei nº 8.080/1990, conhecida como Lei Orgânica da Saúde, para incluir o artigo 19-V, que determina que os gestores do Sistema Único de Saúde (SUS), em todas as esferas (federal, estadual e municipal), realizem campanhas permanentes de conscientização contra a automedicação, com o objetivo de informar a população sobre os riscos dessa prática, especialmente no que se refere ao uso de antibióticos e de medicamentos sujeitos a controle especial (BRASIL, 2024a). Ao exigir que as campanhas sejam permanentes, a norma estabelece uma política contínua de educação em saúde, buscando transformar a conscientização sobre o uso de medicamentos em um processo constante e integrado às ações do SUS, e não apenas em iniciativas pontuais.

O impacto dessa lei na sociedade é amplo. Em primeiro lugar, ela contribui para dar visibilidade ao problema da automedicação, reconhecendo-o oficialmente como uma questão de saúde pública e exigindo que os gestores públicos se comprometam com a informação e a prevenção. Isso tende a ampliar o conhecimento da população sobre os riscos de se medicar sem orientação adequada, auxiliando na redução desta prática que podem mascarar sintomas, dificultar diagnósticos ou gerar complicações clínicas (Domingues *et al*., 2017). Além disso, a obrigatoriedade das campanhas em todas as esferas administrativas promove a uniformização das ações de saúde pública, garantindo que a conscientização atinja diferentes regiões e contextos socioculturais do país.

Outro impacto positivo da Lei nº 14.912/2024 é o fortalecimento do uso racional de medicamentos, princípio fundamental da política de assistência farmacêutica brasileira. De acordo com o Ministério da Saúde (BRASIL, 2024b), o uso racional pressupõe que o paciente receba o medicamento apropriado à sua condição clínica, na dose correta e pelo tempo adequado. Ao promover campanhas educativas e alertar sobre os perigos da automedicação, a nova

legislação estimula o comportamento responsável e o uso consciente dos medicamentos, contribuindo para a redução de reações adversas, intoxicações e outros agravos relacionados à automedicação indevida. Além disso, a lei reforça a importância da educação em saúde como estratégia preventiva, pois a informação é um dos instrumentos mais eficazes para modificar comportamentos de risco.

Em síntese, a Lei nº 14.912/2024 representa um avanço significativo nas políticas públicas brasileiras, ao reconhecer a automedicação como uma questão de saúde coletiva e estabelecer a obrigatoriedade de campanhas permanentes de conscientização sobre seus riscos. Essa medida fortalece o compromisso do país com o uso racional de medicamentos, auxilia na ampliação da educação em saúde e, com isto, há potencial na redução dos danos causados pela automedicação indiscriminada.

Apesar da publicação recente da nova lei incluindo as campanhas de automedicação na Lei Orgânica da Saúde, o estudo da automedicação no Brasil é antigo, com um dos primeiros estudos datando de 1997 no qual Arrais e colaboradores traçaram um perfil de medicamentos vendidos sem apresentação de receituário em farmácias encontrando mais de dez mil princípios ativos. Medicamentos para o aparelho digestivo e metabolismo foram os mais procurados (24,0%), seguidos por medicamentos com ação no sistema nervoso central (18,2%) e no sistema respiratório (17,7%). Dentre os medicamentos comprados, 70% eram para uso individual, mas 30% eram para uso coletivo (familiar), o que evidencia mais uma problemática da automedicação (Arrais *et al.*, 1997).

A prevalência de automedicação apresenta variações conforme a população de estudo (gestantes, jovens adultos, estudantes, entre outros) mas segundo a revisão sistemática com meta-análise conduzida por Domingues e colaboradores (2015), há cerca de 22,9% (IC95% 14,6-33,9) de prática de automedicação na população brasileira em geral, podendo chegar a 35% em estudos de mais alta qualidade metodológica. Isso indica que uma parte importante da população brasileira adulta se automedica, o que pode significar um problema de saúde pública devido aos efeitos adversos dos medicamentos e as chances de intoxicação.

Alguns autores buscaram identificar fatores associados à prática de automedicação na população brasileira, como Arrais e colaboradores (2016) que identificaram o sexo feminino, morar na região norte, nordeste e centro do país, e ter uma ou mais doenças crônicas como características associadas a uma maior prática de automedicação (Arrais *et al.*, 2016). Por outro lado, um estudo conduzido em comunidades ribeirinhas do Amazonas identificou o sexo masculino, ser jovem, não ter procurado por serviço de saúde no último mês, maior tempo de deslocamento da comunidade à zona urbana e ter o hábito de consumir de medicamentos alopáticos por conta própria como fatores associados à automedicação (Gama; Secoli, 2020).

Um estudo conduzido em 2010 por Schmid e colaboradores identificou a presença de morbidades agudas, acesso ao medicamento por compra em farmácia, idade menor que 47 anos e uso de medicamentos que atuam no sistema nervoso central como fatores fortemente associados à prática de automedicação (Schmid; Bernal; Silva, 2010). Já o estudo de Pons e colaboradores (2017) identificou que ter o medicamento em casa ou ter utilizado o medicamento previamente são fatores que influenciam a praticar automedicação (Pons *et al.*, 2017). Desta forma, identifica-se que ainda existe muito a se pesquisar sobre automedicação na população brasileira afim de identificar mais fatores que influenciem nessa prática, como, por exemplo, a recente pandemia de COVID-19.

2.2. Automedicação e a pandemia de COVID-19

Durante a pandemia de COVID-19 nosso país experienciou um grande estímulo à automedicação devido ao protocolo de “tratamento precoce” ou “kit-COVID” incentivado pelo governo federal, Ministério da Saúde e Secretaria de Saúde (Ministério da Saúde, 2020; Carvalho; Guimarães, 2020). Os medicamentos hidroxicloroquina/cloroquina, azitromicina, ivermectina, nitazoxanida, e ainda, os suplementos zinco e vitaminas C e D foram combinados de diversas formas após a divulgação de estudos científicos de seus supostos benefícios no combate ao coronavírus *in vitro*, porém sem quaisquer

evidências clínicas comprovadas acerca da eficácia e segurança (Kalil, 2020; Rodgers *et al.*, 2021).

A Agência Nacional de Vigilância Sanitária, a Agência Norte-Americana de Administração de Alimentos e Medicamentos (*Food and Drug Administration – FDA*) e a OMS posicionaram-se contrariamente à utilização de quaisquer substâncias de forma preventiva ou de tratamento para COVID-19 devido à ausência de evidências concretas de eficácia (FDA, 2020; OPAS, 2020).No entanto, apesar da ausência de eficácia clínica comprovada contra a COVID-19 e contra o posicionamento de importantes órgãos de saúde globais, o consumo de alguns medicamentos foi amplamente praticado pela população mundial. Em um estudo conduzido nos Estados Unidos com 40 pacientes que utilizaram ivermectina para prevenir a infecção ou tratar sintomas de COVID-19, 33 apresentam alguma reação adversa. Entre os participantes, 15 apresentaram sintomas menores, enquanto 25 demostraram reações mais graves. Dentre os efeitos adversos relatados, a toxicidade neurológica foi o achado mais presente (Farah *et al.*, 2022)

O uso de ivermectina também esteve presente em um estudo conduzido com pacientes hospitalizados por complicações de COVID-19 no Peru. De 301 pacientes participantes, 54,8% realizaram automedicação antes de ingressar no serviço de saúde, sendo que entre eles 85,5% relataram a automedicação com ivermectina e 71,5% com azitromicina, ambos medicamentos sem eficácia comprovada contra o coronavírus. A presença de sintomas gripais de alerta à COVID-19 como febre, tosse, dor de cabeça, perda do olfato e do paladar, náuseas e vômitos lideraram os motivos que influenciaram os participantes a se automedicar (Vasquez-Elera *et al.*, 2022).

O aumento da procura da comercialização de medicamentos sem prescrição foi o alvo de pesquisa de um estudo realizado na Índia, evidenciando que, de 204 farmácias entrevistadas, 88,23% alegaram a recepção de pacientes solicitando medicamentos para tratamento ou prevenção de COVID-19 sem prescrição. Ainda, foi identificado um aumento de 25% da busca de medicamentos sem prescrição, quando comparado com a comercialização anterior e os medicamentos mais solicitados pelos pacientes foram a vitamina C (92%) e a azitromicina (68%) (Dutta *et al.*, 2022)

Além destes medicamentos especulados para o tratamento ou prevenção de COVID-19, durante a pandemia outros medicamentos também foram mais consumidos pela população. Segundo a ABRAFARMA, o primeiro semestre de 2021 apontou um crescimento de 18,45% no faturamento das farmácias, sendo os medicamentos isentos de prescrição (MIPs) os líderes de consumo, gerando adição de 23,29% nas vendas, com uma receita de R$ 6,36 bilhões (Abrafarma 2021).

Uma revisão sistemática acerca do cenário de automedicação no período da pandemia foi realizada e identificou uma prevalência de 44,78% de automedicação dentre 12 artigos incluídos. Dentre os medicamentos mais citados estavam os analgésicos e antibióticos, além de suplementos nutricionais. Os sintomas de febre, dor de garganta, dores musculares, resfriado e tosse foram os mais relatados como objetivos de tratamento, porém a prevenção ou tratamento da COVID-19 foi a principal causa para praticar automedicação. O estudo relata, ainda, que durante o período pandêmico as sensações de medo e ansiedade, os rumores sobre a necessidade de aumentar a imunidade e a facilidade de obtenção de medicamentos foram motivadores de automedicação (Shrestha *et al.*, 2022)

Outra revisão sistemática, conduzida com 8 artigos, demonstrou variação na prevalência de automedicação de 4 a 88% e identificou os antibióticos, hidroxicloroquina/cloroquina, paracetamol, vitaminas e suplementos, ivermectina e ibuprofeno como os medicamentos mais utilizados. Nesta revisão foi identificada ainda a diferença entre automedicação na população geral e populações específicas, como os trabalhadores da área da saúde e os estudantes universitários, sendo que estes apresentaram prevalência de automedicação de, respectivamente, 33,9% e 51,3% (Quincho-Lopez *et al.*, 2021)

Com isto, além da automedicação realizada pela população em geral, essa prática também foi identifica em grupos específicos fortemente afetados pela pandemia. Em pesquisa realizada na República da Guiné, continente Africano, entre 975 trabalhadores da área da saúde, em sua maioria médicos e enfermeiros, mais da metade (68,7%) alegaram praticar a automedicação para prevenção de COVID-19 após demonstrar sintomas de alerta, mas sem realizar

a testagem adequada de pesquisa do coronavírus. Os antibióticos (azitromicina, amoxicilina e ampicilina) foram os líderes de escolha para automedicação, seguidos por paracetamol, vitamina C e hidroxicloroquina (Toure *et al.*, 2022). Resultados semelhantes também foram obtidos em um estudo conduzido com 669 profissionais da área da saúde de 3 hospitais na Nigéria, no qual 36,3% relataram ter praticado automedicação durante a pandemia de COVID-19. Maior idade, ser farmacêutico e já ter realizado ao menos um teste de COVID-19 foram fatores associados à automedicação e os medicamentos mais escolhidos para essa prática foram ivermectina, azitromicina, vitamina C, cloroquina e zinco (Okoye *et al.*, 2022).

Junto dos profissionais de saúde, a população de estudantes da área da saúde também foi observada devido à prática de automedicação durante a pandemia. No Nepal, um estudo transversal realizado com 383 médicos e estudantes de medicina evidenciou 50,4% de automedicação. A maioria (31,7%) alegou se automedicar quando notou a presença de sintomas de COVID-19 ou para se prevenir da infecção, sendo que em ambos os casos não realizaram a testagem diagnóstica (Acharya; Shrestha; Karki, 2022). Segundo alguns outros estudos, a população estudantil apresentou menor satisfação com suas atividades desenvolvidas durante a pandemia. A transformação do ensino em uma forma remota de aprendizado e a insegurança com o futuro de suas profissões, podem ter impactado na decisão de realizar a automedicação (Maia; Dias, 2020; Vieira *et al*., 2020).

2.3. Automedicação em estudantes universitários

De acordo com estudos conduzidos anteriormente a pandemia de COVID-19, os estudantes consistem em um grupo a ser observado no tocante da automedicação (Domingues *et al.*, 2017). Em uma revisão sistemática com meta-análise conduzida foi identificada uma prevalência de 70,1% (95% IC: 64.3–75.4%) de automedicação entre estudantes universitários das mais diversas localidades (Behzadifar *et al*., 2020).

Prevalências elevadas também foram encontradas em recentes estudos com a população brasileira. Estudantes de Enfermagem de uma universidade

privada do estado de Minas Gerais apresentaram 94,5% de prática de automedicação, inclusive com medicamentos controlados com retenção de receituário obrigatória (Pinto *et al.*, 2021). No estado do Amazonas, estudantes de graduação de uma universidade pública apresentaram 80,1% de prática de automedicação e esta prática foi associada com a indicação de medicamentos a terceiros (Lima *et al.*, 2022).

A área de conhecimento dos estudantes é vista como uma influenciadora para o consumo de medicamentos, pois em diversos estudos são demonstradas elevadas prevalências de automedicação em estudantes da área da saúde, mais bem familiarizados com medicamentos e seus efeitos. Uma revisão integrativa sobre automedicação em estudantes de medicina sugeriu uma elevada prevalência da prática de automedicação e identificou que ela aumenta significativamente conforme os estudantes avançam na trajetória do curso (Delmondes; Souto; dos Santos, 2024). Resultados similares foram identificados em uma revisão sistemática realizada com onze estudos que avaliaram a automedicação praticada por estudantes também do curso de medicina e identificaram um aumento da prática com o avanço dos estudantes no curso. Além disso, os principais medicamentos utilizados para a prática foram os analgésicos e os anti-inflamatórios (Medeiros; Araújo; Gomez, 2022).

Além da área do curso de graduação, outras razões elencadas para a associação dos estudantes com a automedicação são a maior facilidade de obtenção de informações e a consequente confiança gerada pelo conhecimento adquirido no nível superior (Domingues *et al*., 2017; Santos *et al*., 2022). Além disto, a vivência de situações estressoras está entre um dos motivos mais citados para o consumo de medicamentos por conta própria (Araujo *et al*., 2021; Lima *et al*., 2022).

2.4. Automedicação em estudantes universitários durante a pandemia de COVID-19

A facilidade na utilização de tecnologias e a familiaridade com elas também coloca os estudantes em uma posição influenciável pelas informações divulgadas sobre a COVID-19. O medo do contágio pelo coronavírus foi

identificado em estudantes com maior acesso às redes e mídias sociais em um estudo conduzido em Gana, demonstrando como o acesso facilitado por contribuir negativamente à saúde dos estudantes durante a pandemia (Malm *et al.*, 2022).

Ademais, certos estudantes vivenciaram durante a pandemia uma maior modificação devido a certas proibições de atuação, como no caso de estudantes de área da saúde que foram afastados do atendimento à população devido ao risco de contágio pelo contato direto (Melo, 2021). Com esta influência da pandemia diretamente na vida dos estudantes, a saúde física e mental dos mesmos se apresenta exposta a modulações pertinentes à situação enfrentada.

A presença de angústias derivadas da pandemia de COVID-19 e o próprio medo de contrair o coronavírus foram identificados como inversamente correlacionados com uma boa saúde mental para os estudantes e, até mesmo, com a sensação de esperança para enfrentar a pandemia e seguir sua carreira acadêmica (Sarker; Sugawara; Nishad, 2022). Esta influência na saúde mental também pode ser identificada em um estudo realizado com estudantes do último ano de medicina que apresentaram prevalências de 47,8% e 52,1% para sintomas ansiosos e depressivos, respectivamente (Carletto *et al.*, 2022). Além disso, o medo da infecção por COVID-19 e o agravamento das condições psicológicas e estresse devido à pandemia estão entre os fatores associados ao desenvolvimento de problemas de saúde mental. Desta forma, a pandemia apresentou a probabilidade de somar à decisão dos estudantes de se automedicar por motivos já citados anteriormente de influência do governo, órgãos de saúde, mídias e redes sociais, dentre outras situações.

Não distante, esta situação já foi identificada em alguns estudos conduzidos mundialmente. Isto pode ser observado, por exemplo, em um estudo conduzido no Paquistão, no qual foi identificada uma prevalência de automedicação de 83% entre os 489 estudantes da área da saúde participantes. O paracetamol e os multivitamínicos foram os medicamentos mais comumente utilizados pelos estudantes e dentre os motivos para se automedicar houve destaque para “proteção contra COVID-19” e “tratamento de gripes ou resfriados” (Yasmin *et al.*, 2022). No período inicial da pandemia também já era possível identificar a automedicação em 58% dos 520 estudantes que

participaram de um estudo conduzido de março a junho de 2020 na Arábia Saudita. Sintomas como dor de cabeça, febre, tosse e resfriados foram as principais razões para usar medicamentos sem prescrição, sendo os analgésicos, antibióticos e antipiréticos os grupos mais utilizados (Saleem; Butt; Ahmad, 2021).

Estes grupos, junto dos corticoides, também foram identificados como os mais utilizados para praticar a automedicação por uma amostra de 718 estudantes analisada no Peru. A prevalência de automedicação foi de 51,3% em geral, sendo que neste grupo a maioria utilizou medicamentos sem prescrição para alívio de sintomas respiratórios (62,2%) (Miñan-Tapia *et al.*, 2020). Ainda uma revisão sobre automedicação realizada por estudantes durante a pandemia de COVID-19 explana que há um aumento da prática no período pandêmico e afirma que uma das razões é o desencorajamento de realizar consultas médicas praticado pela família dos envolvidos (Mitra, 2021).

Além do consumo geral de medicamentos, o uso de fármacos especulados para o tratamento da COVID-19 também foi observado na população universitária (Souza *et al*., 2024). Em um pequeno estudo conduzido no Paraná composto por 59 estudantes universitários demonstrou que 84,75% afirmaram ter realizado automedicação. Dentre estes, muitos afirmaram acreditar na eficácia dos medicamentos especulados para o tratamento de COVID-19, mesmo com a ausência de estudos que comprovem isto (Andrade; Moreno; -Ortiz, 2021).

Em um estudo conduzido por nosso grupo de pesquisa com 1553 universitários da região sul do Brasil observou-se uma prevalência de automedicação de 14,9% com a finalidade de prevenir ou tratar a infecção por coronavírus. A ivermectina foi o medicamento mais utilizado pelos estudantes, seguida por vitamina C e vitamina D. Ainda, entre os fatores de risco para prática de automedicação identificados estão residir no estado do Rio Grande do Sul, ter uma renda intermediária, cursar uma universidade pública e estudar na modalidade de ensino a distância (Souza *et al*., 2024).

Estudantes da região nordeste do México também reportaram a utilização de medicamentos buscando a prevenção da COVID-19 (26%). Os corticoides,

vitaminas e produtos naturais foram os medicamentos mais utilizados para a finalidade. Dentre os participantes, 34,5% relataram ter ao menos um familiar que também realizou a automedicação para se prevenir da infecção por coronavírus (González-González *et al*., 2022). Com isto, torna-se possível identificar a influência da pandemia de COVID-19 na prática de automedicação dos universitários.

2.5. Consumo de álcool por estudantes universitários durante a pandemia de COVID-19

Além da automedicação, outro comportamento investigado como influenciado pela pandemia de COVID-19 foi o consumo de álcool por universitários. O álcool é uma substância psicoativa e causadora de dependência que tem seu consumo associado com mais de 200 condições de saúde como doenças hepáticas e cardiovasculares, canceres, tuberculose, HIV/AIDS e outras situações de risco como violência, acidentes de trânsito e influência ao suicídio (World Health Organization, 2024). Em estudos conduzidos no Brasil, o álcool aparece como a substância mais consumida entre os jovens (Chiapetti; Serbena, 2007; De Paiva *et al.*, 2022; Kerr-Corrêa *et al.*, 1999; Pedrosa *et al.*, 2011).

No mundo todo, cerca de 26,5% dos jovens de 15 a 19 anos consomem bebidas alcoólicas e no Brasil esta porcentagem sobe para 72% entre jovens de 18 a 24 anos (FIOCRUZ, 2017; Zierer *et al.*, 2022). Este consumo de álcool torna-se preocupante devido à característica da substância de afetar o desenvolvimento e amadurecimento do sistema nervoso central, especialmente as áreas envolvidas na tomada de decisões, regulação de impulsos e autocontrole que são extremamente importantes para o indivíduo em transformação para a vida adulta (World Health Organization, 2024).

Vem sendo demonstrado que o consumo de álcool é mais frequente e abusivo no ambiente universitário, ocasionando consequências físicas, psicológicas e sociais aos estudantes (De Paiva *et al.*, 2022; Zierer *et al.*, 2022). Fatores como maior independência, redução da supervisão dos pais e aumento dos contatos sociais que acontecem durante a vida universitária podem ajudar a

explicar a maior adesão ao consumo de álcool por parte dos estudantes (Zadarko-Domaradzka *et al.*, 2018). Além disto, o afastamento do círculo de relacionamentos familiares e sociais também pode provocar situações de crise e busca de estratégias para enfrentar essa situação (De Paiva *et al.*, 2022).

Um estudo brasileiro conduzido com 707 estudantes de medicina demonstrou que 99,6% (n=704) apresentaram comportamento de risco para o consumo de álcool e associou um maior consumo com traços da personalidade dos estudantes, como ser mais extrovertido, por exemplo (Schwarzbold *et al.*, 2020). Já em estudo conduzido com 303 estudantes das regiões Norte e Nordeste do Brasil foi evidenciado que 14% passaram a consumir bebidas alcoólicas durante a faculdade (Zierer *et al.*, 2022).

Apesar do consumo de álcool por estudantes universitários já ser considerado cultural por alguns autores, a pandemia de COVID-19 pode ter colaborado para esse hábito atingir mais estudantes ou mesmo ocorrer aumento na quantidade ou frequência do consumo (Guerrero-Agenjo *et al.*, 2023; Monsalve; Espinosa; Espinosa, 2011). Um estudo de coorte prospectivo realizado na Suíça identificou um aumento de 20% no consumo de bebidas alcoólicas por estudantes universitários durante a pandemia de COVID-19. Além disso, uma associação direta entre o aumento do consumo de álcool e aumento de sintomas ansiosos também foi identificada (Zysset *et al.*, 2022). Já em estudo conduzido logo após um *lockdown* com estudantes de enfermagem identificou 36,7% dos estudantes como consumidores excessivos de álcool (Guerrero-Agenjo *et al.*, 2023).

Estudantes de Medicina do estado de São Paulo demonstraram um aumento na frequência de consumo de álcool durante a pandemia de cerca de 4%, no grupo de estudantes que consumia de três a quatro vezes por semana, e 11% entre aqueles que relatavam consumir até duas vezes por semana (Aros *et al.*, 2022). Resultados semelhantes foram descritos em um estudo argentino de acompanhamento do consumo de álcool durante um ano, antes e durante a pandemia de COVID-19. O consumo de álcool aumentou significativamente durante o *lockdown* comparado com o ano anterior (Steinmetz *et al.*, 2023).

Estudantes universitários holandeses com maior idade, maior contato com amigos e que não moravam com os pais aumentaram o consumo de álcool durante a pandemia de COVID-19 (Rubio *et al.*, 2023). Já um estudo brasileiro com 1050 estudantes universitários identificou 18,7% de abuso no consumo de álcool durante a pandemia de COVID-19 e identificou associação entre sintomas ansiosos moderados e severos e o consumo de álcool, especialmente em estudantes do sexo masculino (Fernandez *et al*., 2021). Esta associação também foi demonstrada em um estudo norte americano que evidenciou que os estudantes que apresentaram sintomas de depressão e ansiedade aumentaram em quantidade e frequência o consumo de álcool durante a pandemia de COVID-19 (Lechner *et al.*, 2020).

Com as restrições impostas pela pandemia, o álcool mostrou-se como uma forma de enfrentamento de situações conflitantes, internas ou sociais dos estudantes universitários (Zierer *et al.*, 2022). No entanto, é importante ressaltar que apesar do aumento identificado durante a pandemia, o consumo de álcool em geral está associado a impactos sociais, econômicos e cognitivos negativos na vida e prejudica as atividades de aprendizagem dos estudantes (World Health Organization, 2018). Desta forma, identifica-se a importância de analisar as modificações promovidas pela pandemia de COVID-19 no consumo de álcool por estudantes universitários a fim de traçar um perfil e os fatores associados a possíveis mudanças.

3. Justificativa

A pandemia de COVID-19 provocou profundas mudanças nas rotinas e na saúde mental da população, impactando especialmente os estudantes universitários, grupo frequentemente exposto a elevados níveis de estresse, ansiedade e incertezas quanto ao futuro acadêmico e profissional. Nesse contexto, o isolamento social, a adaptação ao ensino remoto e as restrições de convivência podem ter contribuído para o aumento de comportamentos de risco à saúde, como a automedicação e o consumo de bebidas alcoólicas.

A prática da automedicação é preocupante, pois pode levar ao uso inadequado de medicamentos, mascarar sintomas de doenças e causar reações adversas, além de contribuir para problemas de saúde pública, como a resistência antimicrobiana. Da mesma forma, o aumento do consumo de álcool em situações de estresse e confinamento pode estar associado a distúrbios emocionais, dependência e prejuízos ao desempenho acadêmico.

Diante disso, torna-se relevante a realização de um estudo que avalie a prevalência e os fatores associados à automedicação e ao consumo de álcool entre estudantes universitários antes e durante a pandemia. Tal investigação é essencial para compreender como o contexto pandêmico influenciou esses comportamentos e para subsidiar a elaboração de estratégias educativas e políticas de promoção da saúde voltadas à prevenção do uso inadequado de medicamentos e do abuso de álcool nesse público.

4. Objetivo geral e objetivos específicos

4.1. Objetivo geral

Investigar a automedicação e o consumo de álcool realizados por estudantes universitários da região Sul do Brasil e a influência da pandemia de COVID-19 sobre estas práticas.

4.2. Objetivos específicos

Realizar uma revisão bibliométrica acerca da automedicação praticada por estudantes universitários para traçar um panorama sobre publicações científicas nesse campo do conhecimento.

Associar fatores sociodemográficos, clínicos e relativos à pandemia de COVID-19 ao diagnóstico de COVID-19 em estudantes universitários.

Identificar a prevalência de automedicação entre os estudantes universitários participantes nos períodos antes e durante a pandemia de COVID-19 e definir quais fatores estão associados essa prática.

Caracterizar a frequência de consumo de álcool pelos estudantes universitários e avaliar a influência da pandemia de COVID-19 neste consumo.

5. Manuscritos e artigos

5.1. Manuscrito 1

Manuscrito pronto para submissão à revista “Research in Social and Administrative Pharmacy”

Trends and Research Patterns in Self-Medication among University Students: A Bibliometric Review

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Abstract

Self-medication, defined by the World Health Organization as the use of medicines for self-diagnosed conditions, is influenced by factors such as limited access to healthcare, belief in therapeutic benefits, and the need for symptom relief. Although often regarded as self-care, this practice poses risks, with university students showing particularly high prevalence due to academic pressures and easy access to information. Given this scenario, this study conducted bibliometric analyses, using self-medication AND university students" as search terms in the Web of Science Core Collection database. The analysis, performed with VOSviewer software version 1.6.18, encompasses 98 publications. Among the most cited terms in titles and abstracts are "self-medication," "student," and "study." There was a decrease in the number of publications in 2018, but this was followed by growth starting in 2019, with the highest number of publications occurring in 2024. The countries with the highest number of publications are Saudi Arabia, Pakistan, and Brazil, but China appears as the country with the highest number of citations. The studies with the highest number of citations are from 2008 and 2010 and comprise cross-sectional studies. The findings offer a comprehensive perspective on the international research scenario concerning self-medication among university students, supporting strategic decisions for future publications and contributing to the advancement of scientific knowledge in this domain.

Keywords: self-medication, university students, bibliometric study, bibliometric analysis, research trends, public health.

Introduction

Defined by the World Health Organization (WHO) as “the selection and use of medicines for the treatment of self-diagnosed diseases or symptoms,” self-medication is a practice in which individuals use medicines to obtain some benefit for themselves [1]. The practice of self-medication is the result of multiple factors, including difficulty in accessing health services by the population, belief in the benefits of treatment/prevention of diseases, and the need to relieve symptoms [2, 3].

Although it is seen as a form of self-care and health maintenance, this practice can be dangerous and cause negative effects [3, 4]. Even though medications undergo rigorous testing and are only marketed after their quality, efficacy, and safety have been proven, it is important to note that all of them, without exception, can cause adverse or side effects even when used in the adequate doses [5, 6].

However, self-medication does occur, and one of the populations most prone to and with the highest prevalence of self-medication is university students. Higher educational levels and the ease of searching the internet are among the reasons for this situation [6]. In addition, the pressure of being in higher education with a heavy workload and new responsibilities can contribute to university students becoming ill and lead them to seek medication [7].

Recent studies show an alarming variation in the prevalence of self-medication from 33.6% to 96.7% among university students [8, 9]. The search for associations between university students and self-medication is not new, but it continues to this day to identify patterns that may exist. As such, observational studies and reviews are constantly being published on the subject.

Bibliometrics constitutes a quantitative methodology employed to investigate scientific publications, serving as a valuable tool for assessing research productivity at the levels of individual scholars, institutions, and nations over extended periods. This analytical framework enables the evaluation of research impact, the identification of longitudinal thematic trends, and the recognition of major contributions within a given domain of knowledge through the examination of citation patterns and keyword distributions [10, 11].

Thus, the objective of this study was to perform a comprehensive bibliometric review of the scientific literature on self-medication among university students, aiming to map research trends, identify the most productive authors, journals, and countries, as well as to provide a quantitative and statistical understanding of the knowledge structure and scientific impact within this field.

2. Materials and Methods

2.1. Data source and search strategy

This bibliometric study investigated publications on self-medication among university students up to July 2025. For this purpose, a search was conducted in the multidisciplinary database Web of Science (WoS) using the terms (ALL = (self-medication)) AND (ALL = (university students)), targeting records where these keywords appeared in the title or abstract. The search was conducted without applying any restrictions regarding language, document type, or publication year.

The results obtained from the search were assessed based on the following aspects: keywords, year of publication; most frequently cited references; leading journals; contributing countries; and affiliated institutions.

2.2. Data analysis and presentation

The complete records and reference lists of the selected publications were extracted and analyzed using VOSviewer software (version 1.6.18) for bibliometric analysis [12]. To generate the keyword bubble map, the following steps were followed: 'Create a map based on bibliographic data' and 'Read data from bibliographic database files'. The analysis type selected was 'co-occurrence', with 'all keywords' as the unit of analysis and the 'full counting' method applied. In this method, a term is counted only once per document, regardless of how many times it appears. Each bubble on the map represents a keyword, with its size corresponding to the frequency of occurrence, while the proximity between bubbles indicates how often the terms co-occur in the dataset. A threshold of at least five occurrences was set for keyword inclusion. For table

generation, the following configuration was used: 'citation' as the analysis type and 'documents, sources, countries, and organizations' as units of analysis. The data were then exported and processed in Excel 2019. Additionally, a choropleth map highlighting the countries with the highest publication output on the topic was created using Excel 2019.

3. Results

The search found 98 publications including 4 reviews and 94 original articles. In this study, all types of publications were included. 80.6% (n= 79) of publications were open access.

3.1. Publication years

The earliest record is from 1980 and there were decreases in 2013 (n=1), 2018 (n=2) and 2022 (n=8) (Figure 1). The year with the highest number of publications so far has been 2024, with 13 publications.

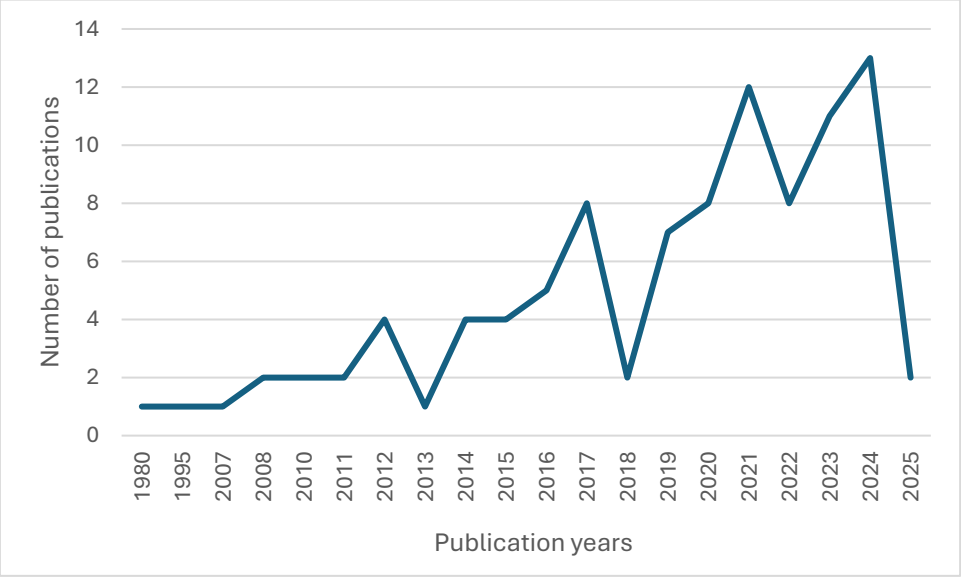

Figure 1: Number of publications on self-medication and university students per year

3.2. Keyword analysis

VOSviewer software was employed to identify and visualize the most frequent terms found in the titles and abstracts of 98 studies related to self-medication among university students. The analysis included only those terms that appeared a minimum of five times across publications. Altogether, 364 terms met this criterion, and the ten most frequent ones are presented in Table 1.

Table 1: Top ten recurring terms from titles and abstracts.

Keyword	Occurrences	Percentage of total (364)
Self medication	113	31.04%
Student	92	25.27%
Study	85	23.35%
University student	74	20.33%
Questionnaire	64	17.58%
Prevalence	63	17.31%
Self	58	15.93%
Antibiotic	50	13.74%
Cross sectional study	49	13.46%
Practice	43	11.81%

Figure 2, also generated using VOSviewer software, presents a bubble map illustrating the frequency of keyword occurrences, where multiple mentions within the same document are counted only once. The size of each bubble reflects how often a term appears overall. Lines connecting the bubbles indicate that the corresponding terms frequently co-occurred within the analyzed publications. Additionally, the color of each bubble represents the average publication year in which the term appeared most prominently—terms shown in blue are associated with older studies, while green-yellow tones correspond to more recent usage (from 2020 onward).

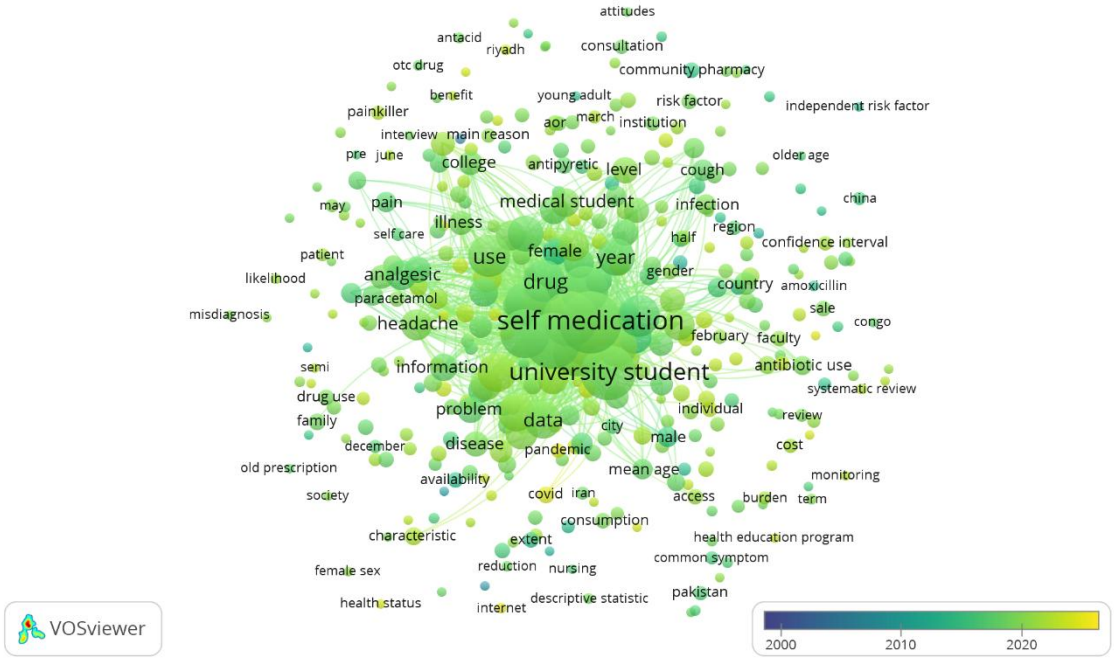

Figure 2: Bubble map from VOSviewer software of words from the titles and abstracts of the 98 publications on self-medication and university students

3.3. Most cited documents

Table 2 summarizes the 10 articles with the highest number of citations of the 98 articles included in this bibliometric review. The article with the highest number of citations was Syed *et al*. [13] written in 2008 with currently 221 citations, followed by Abay and Amelo in 2010 [14] with 171 citations and in third place Savalha *et al*. in 2008 [15] with 149 citations. Nine of the articles included among the most cited are original cross-sectional studies and just one is a systematic review and meta-analysis. The oldest article is from 2008 and the newest from 2020. Eighty six and 82 citations, respectively, were the number obtained for 9th and 10th place. The articles vary between indexed journals and place of study.

Table 2: Ten most cited documents on self-medication and university students.

Author	Title	Type of study	Journal title	Publication year	Total citations
Syed *et al*	Self-medication amongst university students of Karachi: prevalence, knowledge and attitudes	Original article – Cross sectional study	The Journal of the Pakistan Medical Association	2008	221
Abay SM and Amelo W	Assessment of Self-Medication Practices Among Medical, Pharmacy, and Health Science Students in Gondar University, Ethiopia	Original article – Cross sectional study	Journal of Young Pharmacists	2010	171
Sawalha AF	A descriptive study of self-medication practices among Palestinian medical and nonmedical university students	Original article – Cross sectional study	Research in social & administrative pharmacy	2008	149
Pan H *et al*	Prior Knowledge, Older Age, and Higher Allowance Are Risk Factors for Self-Medication with Antibiotics among University Students in Southern China	Original article – Cross sectional study	PLOS ONE	2012	123
Helal RM and Abou-ElWafa HS	Self-Medication in University Students from the City of Mansoura, Egypt	Original article – Cross sectional study	Journal of Environmental and Public Health	2017	118
Klemenc-Ketis *et al*	Self-medication among healthcare and non-healthcare students at University of Ljubljana, Slovenia	Original article – Cross sectional study	Medical principles and practice: international journal of the Kuwait University	2010	117

Lv B *et al*	Knowledge, attitudes and practices concerning self-medication with antibiotics among university students in western China	Original article – Cross sectional study	Tropical medicine & International health	2014	114
da Silva *et al*	Self-medication in university students from the city of Rio Grande, Brazil	Original article – Cross sectional study	BMC Public Health	2012	108
El Ezz NFA and Ez-Elarab HS	Knowledge, atitude and practice of medical students towards self medication at Ain Shams University, Egypt	Original article – Cross sectional study	Journal of preventive medicine and hygiene	2011	86
Behzadifar M *et al*	Prevalence of self-medication in university students: systematic review and meta-analysis	Systematic review and meta-analysis	Eastern Mediterranean health journal	2020	82

3.4. Top Publishing Journals, Organizations, and Countries in the Area of Study

Considering all 98 articles in this review, Table 3 summarizes the countries, educational organizations and journals with the most publications on self-medication and university students. Regarding the countries, Saudi Arabia predominates with 21 publications and 320 citations, followed by Pakistan with 12 publications and 223 citations. Brazil and China have 8 publications each, being Brazil with 105 and China with 393 citations.

In terms of institutional contribution, both the Jordan University of Science and Technology and the University of Sharjah each produced four publications, accruing 55 and 13 citations, respectively. Subsequently, Dow University of Health Sciences (67 citations), King Abdulaziz University (57 citations), and the University of Gondar (57 citations) each contributed three publications, demonstrating a comparable level of research output within the analyzed dataset.

Among the 10 journals that publish the highest number of articles on the subject, Risk Management and Healthcare Policy lead with 7 publications and 128 citations. From 2nd to 9th place there is a tie with 3 publications for Archives of Pharmacy Practice (60 citations), Frontiers in Public Health (26 citations), International Journal of Environmental Research and Public Health (86 citations), Latin American Journal of Pharmacy (26 citations), Pan African Medical Journal (45 citations), Patient Preference and Adherence (18 citations), Revista del Cuerpo Medico del Hospital Nacional Almanzor Aguinaga Asenjo (4 citations) e Tropical journal of Pharmaceutical research (100 citations). BMC Pharmacology & Toxicology is in 10th place with 2 publications and 71 citations on the subject.

Table 3: Top ten contributors from countries, educational organizations and journals.

Country	Publication count	Citations
Saudi arabia	21	320
Pakistan	12	223
Brazil	8	105
China	8	393
Ethiopia	7	217
Iran	7	227
Malaysia	6	164
United Arab Emirates	6	57
Bangladesh	5	72
Egypt	5	154

Organization	Publication count	Citations
Jordan University of Science & Technology	4	55
University of Sharjah	4	13
Dow University of Health Sciences	3	67
King Abdulaziz University	3	57
University of Gondar	3	57
Addis Ababa University	2	143
Almaarefa University	2	28
Amiens-Picardie University Hospital Centre	2	28
Na-Najah National University	2	180
Comsats Institute of Information and Technology	2	33

Journal	Publication count	Citations
Risk management and healthcare policy	7	128
Archives of pharmacy practice	3	60
Frontiers in public health	3	26
International journal of environmental research and public health	3	86
Latin american journal of pharmacy	3	26
Pan African medical journal	3	45
Patient preference and adherence	3	18
Revista del cuerpo medico del Hospital Nacional Almanzor Aguinaga Asenjo	3	4
Tropical journal of pharmaceutical research	3	100
Bmc pharmacology & toxicology	2	71

Figure 3 shows a color map of the countries with the highest number of citations about self-medication and university students, showing China in the lead with 393 citations, followed by Saudi Arabia (320 citations) and Iran (227 citations).

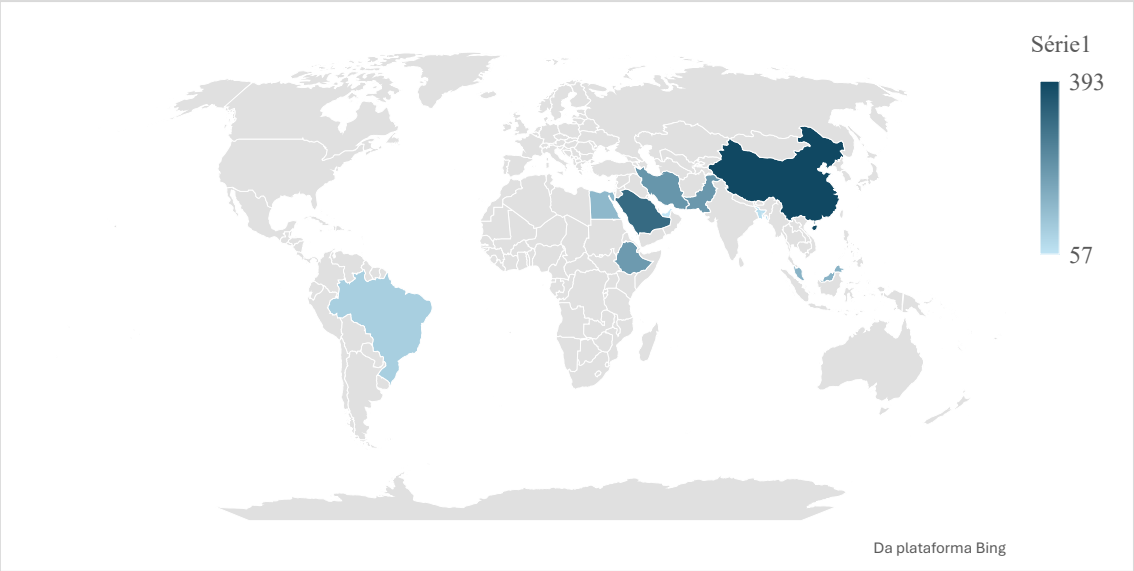

Figure 3: Citations per country.

4. Discussion

This bibliometric study offers a quantitative assessment of scientific literature concerning self-medication among university students, aiming to reveal trends, recurring patterns, and existing knowledge gaps over time.

After a decline in publications in 2018, there has been an increase in publications since 2019, with 2024 leading the way with 13 articles. This period of increase in the number of publications coincides with the COVID-19 pandemic, a time when some authors identify an increase in the purchase and consumption of pharmaceutical products [16, 17]. The increase in the purchase and consumption of medicines may be associated with the practice of self-medication, especially in countries that have medicines known as *over the counter* (OTC) drugs which are sold freely without the need for a prescription.

This sale of OTC drugs also occurs in the four countries with the most publications on self-medication: Saudi Arabia, Pakistan, Brazil, and China. China also leads the ranking of citations, probably due to a combination of factors such as the

robustness of its studies and the establishment of international research collaborations [18].

Furthermore, in 2024 most publications comprised cross-sectional studies that sought to profile students who practiced self-medication and identify associations between the characteristics of these students (gender, age, years of study, etc.) and the practice of self-medication [8, 9, 19–22]. This demonstrates that although there is already knowledge about the relationship between self-medication and university students, various countries are still seeking to identify the profile within their own populations.

This also applies to the 10 most cited studies on the subject, in which we found nine cross-sectional studies and only one systematic review. Among the three most cited articles, it is possible to identify some similarities, such as the objectives of identifying prevalence and factors associated with self-medication among university students. Furthermore, all comprise cross-sectional studies.

The study by Syed *et al*. (2008) [23] was conducted in Pakistan with 572 medical and non-medical university students. It presented a prevalence of self-medication of 76% and identified headache, flu/cold, and fever as symptoms for this practice. The most used medications for self-medication were analgesics (88.3%), antipyretics (65.1%), and antibiotics (35.2%). Among the participants, 87% believe that self-medication can be dangerous to health.

The second most cited article, by Abay and Amelo (2010) [14], was conducted in Ethiopia with 414 students from medical, pharmacy, and health science courses. A self-medication practice of 38.5% was identified, and students obtained their medications from pharmacies and drugstores. Headaches and fever were among the symptoms treated by self-medication. The most commonly used medications for self-medication were analgesics and nonsteroidal anti-inflammatory drugs, but antibiotics were also used. According to the students, factors for self-medicating included previous experience and simplicity of the illness.

The third most cited article, conducted by Sawalha *et al* (2008) [15] in Palestine, involved 1,581 university students and showed a high prevalence of self-medication of 98%. Among the most used medications were analgesics,

decongestants, and antibiotics. The factors reported by students for self-medicating were previous experience and the simplicity of the disease.

As described, the three most cited studies show similarities even in their findings. The assessment of the prevalence of self-medication, the most used medications for self-medication, and the factors that led university students to engage in this practice are described in all three studies conducted in different countries by different researchers.

Some behaviors identified in these most cited articles are concerning, such as the consumption of antibiotics through self-medication. According to the World Health Organization, antibiotics are drugs used to prevent and treat infectious diseases in humans, animals, and plants, but they can cause microbial resistance if used excessively or improperly – as in self-medication practice [24]. Thus, self-medication may involve errors in dosage, administration, or even pharmacological substance, contributing to this resistance and to a major public health problem: the development of superinfections that cannot be treated with existing antibiotics [4, 24].

The use of other medications such as analgesics, anti-inflammatories, and others also poses a health risk to users, since all medications have adverse effects and harmful drug interactions can occur without the individual's knowledge [3]. It is also important to highlight the results found in some studies as decisive factors for self-medication, such as “previous experience” or “simplicity of the disease,” as each situation may have its own specificities and require different medication monitoring.

Conclusion

This bibliometric review underscores the growing scientific interest in self-medication among university students, with particular emphasis during the COVID-19 pandemic. Although cross-sectional designs predominate, the findings consistently reveal high prevalence rates, recurrent patterns in the types of drugs consumed, and common risk factors across diverse contexts.

These results highlight not only the global dimension of this phenomenon but also its potential impact on individual and collective health. The evidence reinforces the urgent need for more robust longitudinal and interventional studies, as well as the development of public health policies and educational strategies aimed at minimizing the risks associated with inappropriate self-medication, especially the misuse of antibiotics and other easily accessible medications.

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5.2. Artigo 1

COVID

MDPI

Brief Report

COVID-19 Exposure and Associated Factors in Southern Brazil Students

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Abstract

Coronavirus disease 2019 (COVID-19) emerged in late 2019 and was declared a pandemic from March 2020 to May 2023, profoundly affecting public health systems, economies, and daily life worldwide. University students were among the most impacted groups, facing abrupt transitions to remote learning, social isolation, and increased psychological distress due to academic and personal uncertainties. During the pandemic, few studies have been conducted with this population and so far, none have evaluated factors associated with COVID-19 infection in university students, so this study aimed to evaluate variables associated with COVID-19 infection among university students in southern Brazil. Data were collected during July to November 2020 through an online questionnaire addressing lifestyle and health, with participation from 1,533 students. Among the variables analyzed, statistically significant associations with COVID-19 infection were identified for age, occupation, use of continuous medication, compliance with social distancing, and self-medication practices. Younger students (18–29 years) and those dedicated solely to studying exhibited higher infection rates. Additionally, participants who reported using continuous medication, not adhering to social distancing measures, or engaging in self-medication were significantly more likely to have contracted COVID-19. These results help outline risk profiles within the university student population and contribute to improved preparedness for future disease outbreaks. Furthermore, they underscore attitudes and behaviors that may increase vulnerability to infectious diseases, highlighting the importance of targeted health promotion and prevention strategies in this demographic.

Keywords: COVID-19; coronavirus; university students; risk profile

1. Introduction

COVID-19 is an illness resulting from infection with SARS-CoV-2, a coronavirus first identified in Wuhan, Hubei Province, China, in 2019 following a rise in cases of community-acquired pneumonia of unknown cause [1]. The virus transmits via respiratory droplets and aerosols released by infected individuals, which meet the respiratory tract of healthy people, making the adoption of protective measures essential [2,3]

Measures such as wearing face masks, frequent hand and surface sanitization with alcohol, and maintaining social distancing were implemented to mitigate the transmission of the disease within the population. But, the closure of schools and universities and the application of home schooling was also necessary [4]. Thus, one of the populations most affected by the COVID-19 pandemic has been students [5,6].

In addition to the challenges of the pandemic, university students are a population already known for facing a period of adaptation when they enter university. University years are frequently demanding for students, as they involve the development of autonomy and accountability for their decisions, often coinciding with relocation from home and physical separation from family support networks [7]. During the pandemic, these difficulties may have been exacerbated and even more difficulties such as distancing from friends and family, a break in academic activities, uncertainty about the future and fear of coronavirus infection have been attributed to university students [8].

In Brazil, postgraduate students have had their academic performance affected by COVID-19 as well as psychological aspects about uncertainty and fear in the development of their work [9]. In addition, a considerable percentage of undergraduate students in southern Brazil practiced self-medication to prevent COVID-19 infection, demonstrating how the pandemic can affect student behavior [10].

Considering the significant impact of the COVID-19 pandemic on students, it is essential to investigate the risk factors associated with disease cases during the first year of the pandemic. Thus, the aim of this study was to identify risk factors associated with positive cases of COVID-19 in university students in southern Brazil.

2. Materials and Method

2.1. Study Design

A cross-sectional study was carried out using a fully online questionnaire during July to November 2020 with Southern Brazilian undergraduate students [10,11].

2.2. Sample Size

A previous list of all undergraduate students at higher education institutions was carried out for the southern states of Brazil (Paraná, Santa Catarina and Rio Grande do Sul) based on the total number enrolled obtained from the most recent census conducted in 2018 by the Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP), available at http://portal.inep.gov.br/basica-censo-escolar-sinopse-sinopse. According to the census, there were 1,428,267 undergraduate students in the region, resulting in a minimum required sample of 1,152 participants estimated by the online calculator available at https://comentto.com/calculadora-amostral/ considering a 5% margin of error, a 95% confidence level, and a heterogeneous population. To account for possible losses, an additional 10% was added, bringing the final required sample size to 1,268 students.

2.3. Inclusion and Exclusion Criteria

To participate in the study, the student had to be an undergraduate student at a higher education institution in one of the three states in the southern region of Brazil, be over 18 years

old and agree to take part in the research after reading the informed consent form. No student received any form of bonus for taking part in this study.

Respondents were excluded from the study if they were in high school, technical courses or any postgraduate course, if they were under the age of 18, if they lived in any other region of Brazil or the world, or if they did not accept after reading the Informed Consent Form.

2.4. Data Collection

A self-administered semi-structured questionnaire was created by the authors with questions about health, lifestyle and behavior before and during the COVID-19 pandemic. The questionnaire was indexed on the Google Forms® platform to ensure the security required during the COVID-19 pandemic. All higher education institutions in the southern region of Brazil were listed and contacted via institutional email, and the questionnaire was also disseminated via social media.

2.5. Ethical Approvals

The research was approved by the Research Ethics Committee of the Federal University of Rio Grande (CEPAS-FURG) under approval number 4.127.866/2020. Participation was entirely voluntary, and an informed consent form was provided on the initial page of the online questionnaire. This document outlined the objectives of the study, potential risks, and the rights of the participants. Access to the questionnaire was granted exclusively to individuals who formally consented to participate.

2.6. Statistical Approach

The results are presented in relative and absolute frequencies and the associations between the dependent variable (COVID-19 diagnosis) and the independent variables (sociodemographic and clinical) were carried out using the Chi-square test.

3. Results

1553 university students made up the sample analyzed. Table 1 summarizes the associations between sociodemographic variables and the occurrence of COVID-19 infection, as assessed using the Chi-square test. Among the variables analyzed, age and occupation demonstrated statistically significant associations with COVID-19 infection.

Table 1. Association performed by Chi-square between COVID-19 infection and sociodemographic variables (n/%).

Variables	COVID-19 infection		p value
	Yes	No	
Age			
18-29 years	162 (82.7)	25 (1.8)	**<0.001**
30 or more	34 (17.3)	1332 (98.2)	
Gender			
Female	136 (69.4)	972 (71.6)	0.554
Male	60 (30.6)	385 (28.4)	

Race			
Non white	36 (18.4)	247 (18.2)	0.921
White	160 (81.6)	1110 (81.8)	
Graduation area			
Health	74 (37.8)	580 (42.7)	0.189
Non health	122 (62.2)	777 (57.3)	
Income (Real)			
Until BRL 2,100	42 (21.4)	351 (25.9)	
Between BRL 2,101-BRL 5,250	87 (44.4)	541 (39.9)	0.333
Up to BRL 5,251	67 (34.2)	465 (34.2)	
Occupation			
Full-time students	131 (66.8)	630 (46.4)	**<0.001**
Work/Internship	65 (33.2)	727 (53.6)	

Participants aged 18–29 years accounted for most COVID-19 cases (82.7%), whereas only 1.8% of non-infected individuals were in this age group (p<0.001), indicating that younger individuals were significantly more likely to become infected. In terms of occupation, individuals who reported only studying were more frequently infected (66.8%) compared to those engaged in work or internships, who represented most of the non-infected group (53.6%) (p<0.001).

Conversely, no statistically significant associations were observed between COVID-19 infection and gender (p=0.554), race (p=0.921), graduation area (p=0.189), or income level (p=0.333). These findings indicate that, within this sample, such variables were not significantly associated with the likelihood of contracting COVID-19.

Table 2 presents the associations between health-related and behavioral variables and COVID-19 infection. Significant associations were found for the use of continuous medication, compliance with social distancing, and self-medication practices.

Table 2. Association performed by Chi-square between COVID-19 infection and health and lifestyle variables (n/%).

Variables	**COVID-19 infection**		***p* value**
	Yes	**No**	
Having a chronic disease			
Yes	83 (42.3)	481 (35.4)	0.068
No	113 (57.7)	876 (64.6)	
Having depression and/or anxiety			

Yes	43 (21.9)	331 (24.4)	0.476
No	153 (78.1)	1026 (75.6)	
Using continuous use medicine			
Yes	66 (33.7)	328 (24.2)	**0.005**
No	130 (66.3)	1029 (75.8)	
Fulfilling social distancing			
No	6 (3.0)	47 (3.5)	**<0.001**
Go out to work but avoid crowds and get togethers	76 (38.8)	340 (25.0)	
Only go out to do essential things	114 (58.2)	970 (71.5)	
Living			
Alone	21 (10.7)	101 (7.4)	0.176
With friends or roommates	5 (2.6)	56 (4.1)	
With family	170 (86.7)	1200 (88.4)	
Realize health decrease during the Pandemic			
Yes	94 (48.0)	697 (51.4)	0.401
No	102 (52.0)	660 (48.6)	
Practice self-medication			
Yes	70 (35.7)	162 (11.9)	**<0.001**
No	126 (64.3)	1195 (88.1)	

Among participants who were infected, 33% reported using continuous-use medications, compared to 24.2% of those who were not infected (p=0.005). Compliance with social distancing was also significantly associated with infection status (p<0.001). Those who did not practice social distancing or who continued to go out regularly were more likely to be infected, whereas individuals who left home only for essential activities were less likely to contract the virus.

Additionally, self-medication was notably more frequent among infected individuals (35.7%) compared to the non-infected group (11.9%) (p<0.001), suggesting a potential link between informal treatment behaviors and increased exposure or risk of infection. In contrast, no statistically significant associations were observed between COVID-19 infection and having a chronic disease (p=0.068), having depression and/or anxiety (p=0.476), living conditions (p=0.176), or perceived health deterioration during the pandemic (p=0.401).

4. Discussion

The present study identified specific variables associated with a positive COVID-19 diagnosis in students during the first year of pandemic. Age emerged as a significant factor, with younger students comprising most confirmed cases. This finding diverges from previous evidence reported in a comprehensive review of the initial COVID-19 cases across multiple countries, in which the mean age of infected individuals was 43.38 ± 15.19 years (mean ± standard deviation), during the early phase of the pandemic [12]. However, according to a Swiss study, younger individuals may have been more susceptible to stressors associated with the COVID-19 pandemic, such as

school closures — a factor that significantly impacted students [13]. Furthermore, students exclusively engaged in academic activities reported a higher incidence of COVID-19 compared to those who were simultaneously employed. School closures may have negatively impacted students' lives by reducing social interactions with peers and disrupting their daily routines — effects particularly pronounced among those solely dedicated to studying. A systematic review highlights that school closures were associated with a range of adverse outcomes for students during the pandemic. [14].

The use of continuous medication was also identified as a factor associated with a positive COVID-19 diagnosis. These medications are typically prescribed for the management of chronic diseases such as diabetes, hypertension, respiratory diseases such as asthma, among others, which often impair the immune system and reduce the body's ability to respond effectively to other illnesses. As an infectious disease, COVID-19 may more easily affect individuals with compromised immune function or underlying health conditions [15]. Immune vulnerability may also result from the use of medications through self-medication practices, particularly when undertaken without supervision from qualified healthcare professionals. This association was evidenced in our study, which found a higher prevalence of COVID-19 positive cases among students who engaged in self-medication compared to those who did not [16,17]. Although self-medication may be perceived as a convenient approach to managing minor health issues, it also poses significant risks, as the inappropriate use of medications can lead to adverse effects and potential intoxication [16]. Particularly in Brazil, media outlets have contributed to the promotion of self-medication with drugs lacking scientific evidence for efficacy in the treatment or prevention of COVID-19. Such indiscriminate use of medications may pose serious health risks to individuals, including the increased susceptibility to COVID-19 infection, as observed in the present study [10,11].

Students who complied with social distancing measures had fewer cases of COVID-19 infection. Individuals who did not fully comply with public health recommendations — whether due to essential activities or participation in non-recommended leisure activities — exhibited a higher prevalence of COVID-19 positive cases. This finding aligns with public health guidelines and governmental directives that strongly advocate social isolation as an effective strategy to mitigate viral transmission. Given that SARS-CoV-2 spreads primarily through respiratory droplets and aerosols emitted by infected individuals and subsequently inhaled by others, reduced social contact was crucial in limiting the spread of the virus [15,18].

In addition to the associations found here, it should also be noted that the pandemic was a period of many changes for the entire population, but the closure of schools and universities brought severe changes for students, and this can impact on their attitudes and thoughts, contributing to the risk of becoming infected with COVID-19.

5. Conclusion

Our study identified associations between COVID-19 infection and factors including younger age, exclusive dedication to academic activities, use of continuous medication, engagement in self-medication, and inadequate adherence to social isolation measures. Based on these findings, it is possible to delineate specific risk groups and behaviors associated with COVID-19, thereby informing targeted strategies to mitigate the impact of current and future public health emergencies by focusing on identified risk profiles.

6. Limitations

This study was conducted over a brief period at the onset of the pandemic, during which many universities were still transitioning to remote learning models. Additionally, the use of a self-administered questionnaire may have introduced interpretation bias among the participants. The cross-sectional design limits the ability to establish causal relationships between variables, as data were collected at a single point in time rather than across multiple time periods. As such, it is not possible to determine whether the observed associations reflect long-term patterns or are specific to the context of the early pandemic period. Furthermore, the retrospective nature of the study may have been subject to recall bias, as participants were asked to reflect on past behaviors and experiences, which may not have been accurately remembered or reported. These methodological constraints should be considered when interpreting the findings and their generalizability. Finally, no multivariate analysis was performed, and no control for potential confounding factors was applied, which limits the strength of the associations observed.

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Conflicts of Interest: All the authors declare that there is no conflict of interest.

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5.3. Artigo 2

Discover Public Health

Research

Self-medication practice of university students of South Brazil and its implications during the COVID-19 pandemic: a cross-sectional study

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Title: Self-medication practice of university students of South Brazil and its implications during the COVID-19 pandemic – a cross-sectional study

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Abstract

Introduction: Self-medication (SM) is the consumption of medications without a prescription. Despite being a potentially dangerous practice, self-medication is common among the Brazilian population and was encouraged during the COVID-19 pandemic. **Objectives:** Our study aimed to evaluate the practice of self-medication among undergraduate students in southern Brazil and how the pandemic period influenced it. **Design and setting:** Through an online questionnaire applied in 2020, 1,553 responses were collected. The results were analyzed using the chi-square test and Poisson test. **Results:** A prevalence of 97.2% of self-medication was found during the regular period of life, but during the pandemic, this rate significantly decreased to 57.2%. Most students practiced SM before the pandemic and continued during this period (58.7%), while a significant portion of the sample stopped self-medicating during the pandemic (41.3%). Being female, studying at a public university, perceiving a decline in health status, and noticing new symptoms or diseases during the pandemic were associated with a lower probability of stopping SM. Conversely, living alone during the pandemic was associated with a higher probability of discontinuing SM. Headache was the most frequently reported symptom. The sources of information varied, but consulting the internet, family or friends' opinions, and pharmacists were the most cited. Different reasons for SM were identified, but the most prevalent justification was having experienced the symptom before and knowing what medication to use. **Conclusions:** These data help identify behavioral changes promoted by stressful periods such as the COVID-19

pandemic and provide opportunities to implement health education actions to reduce self-medication.

Keywords: Self-medication, undergraduate students, medicines, self-care, pandemic.

Introduction

Self-medication (SM) is the use of medicines on one's own initiative, without a prescription or guidance from a healthcare professional [1]. The practice of SM is often considered a convenient solution for minor health issues and is believed to help treat or cure individuals while also contributing positively to the healthcare system and society as a whole [2]. Nevertheless, the use of medicines without professional guidance can also occur in an improper manner, such as consuming prescription-only medications or using incorrect doses or dosages that differ from those tested and approved. This can lead to adverse effects and toxicity, highlighting irresponsible—or irrational—SM, which may be a dangerous practice [3–5].

In this regard, SM can cause serious problems due to adverse drug effects and their interactions with other medications, substances, or even food [6]. Currently, this practice has been associated with various factors such as age, sex, occupation, income, having children, and others. Additionally, some studies have demonstrated that the COVID-19 pandemic influenced SM practices and medication choices [3, 7–12].

During the critical period of the COVID-19 pandemic, the population underwent significant routine changes, including constant sanitization of hands and objects, social distancing, lockdown measures, remote work and study, and the suspension of many daily activities such as physical exercise, leisure, and social interactions [13–15]. Furthermore, the continuous fear of coronavirus infection and the uncertain prognosis of the disease, combined with the urgent search for new treatments, fueled speculation about the repurposing of existing

drugs to prevent or treat COVID-19. This contributed to an increase in the consumption of medications, particularly without a prescription [12, 15–18].

In addition, one of the most affected groups during the COVID-19 pandemic was students—about 87% of them were directly impacted by social distancing, remote learning, and lockdowns [19]. Moreover, several studies have shown that students engage in SM at higher rates than other population groups [5, 7, 20–24]. Research conducted during the pandemic in other countries indicated that students also took medications without a prescription to prevent COVID-19 or to relieve pain and other symptoms [25–27] However, it is important to remember that SM can pose significant risks to patients and worsen their health conditions, potentially leading to the need for medical care from an already overwhelmed healthcare system during the pandemic [28, 29].

Thus, understanding SM practices is crucial for analyzing population behavior and based on this knowledge, developing strategies to minimize the adverse effects of this practice. In this context, this study aimed to identify SM practices among university students in southern Brazil and assess the influence of the COVID-19 pandemic on these behaviors.

Materials and methods

Study design

A cross-sectional online study was conducted between July and November 2020 using a self-reported electronic questionnaire developed by the authors to assess information about the practice of SM before and during the COVID-19 pandemic, as well as variables related to sociodemographic characteristics, health perception, and lifestyle [13].

Sample size and participants

The study participants consist of undergraduate students from southern Brazil. The sample size was calculated based on the number of students enrolled in undergraduate courses at Higher Education Institutions in southern Brazil. This information was obtained from the most recent census, conducted in 2018 by the *Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira* (National Institute of Educational Studies and Research Anísio Teixeira), available at http://portal.inep.gov.br/basica-censo-escolar-sinopse-sinopse.

The sample size was calculated online using the website https://comentto.com/calculadora-amostral/, with a margin of error of 5%, a 95% confidence interval, and considering a heterogeneous population. A total of 1,428,267 enrolled students were identified in the census, and the sample size was determined to be 1,152. To account for potential losses, an additional 10% was added, resulting in a final sample size of 1,268 students.

Inclusion and Exclusion criteria

The sample consists of university students who met the inclusion criteria: being at least 18 years old, living in the states of southern Brazil (Paraná, Rio Grande do Sul, and Santa Catarina), being enrolled in an undergraduate course, and agreeing to participate in the study by providing consent and completing the questionnaire.

Participants were excluded if they were not undergraduate students (e.g., high school students, technical course students, or postgraduate students), did not live in the southern region of Brazil, or did not complete the questionnaire.

Data collection

A questionnaire was structured by the authors, containing questions about sociodemographic characteristics, lifestyle, and the practice of SM in two periods: before and during the COVID-19 pandemic (see Suppl. Material). The entire structure was uploaded to the free Google Forms® platform to ensure accessibility for all participants and to comply with COVID-19 safety guidelines regarding social distancing during that period. The study was promoted, and participants were invited through social media platforms such as Instagram®, Facebook®, and WhatsApp® by sharing a research invitation banner and the questionnaire access link. Additionally, emails were directly sent to all universities in southern Brazil (listed according to the *Ministério da Educação* in 2020) by the corresponding author, addressing university directors, course administrators, and interest groups.

A pilot study was conducted before the main survey with a small group of university students who were not part of the final sample. Approximately fifteen students from universities in Rio Grande do Sul (*Universidade Federal do Rio Grande* – FURG and *Universidade Federal do Rio Grande do Sul* – UFRGS) answered the questionnaire and evaluated aspects such as the number of questions, response format, and available answer options to assess its applicability and response time. The pilot group provided feedback on the number of questions and the clarity of multiple-choice options, which was incorporated into the final version of the questionnaire.

To maintain confidentiality, all responses were anonymous. No names, phone numbers, or email addresses were collected. Google Forms® only recorded the date and time of each response.

Variables

Dependent variables – Self-medication practices

The practice of SM was measured in a binary manner across two periods. Before the pandemic, students were asked, *"Did you practice SM for any symptom?"* with "yes" or "no" response options. During the pandemic, the

question was, *"During the pandemic, did you practice SM for any reason?"* also with "yes" or "no" options.

These two questions were used to compare students' SM profiles. Students who answered "yes" for both periods were classified as maintaining the practice of SM. Those who answered "yes" before the pandemic but "no" during the pandemic were classified as having stopped the practice. Students who answered "no" before the pandemic and "yes" during the pandemic were categorized as having started SM due to the COVID-19 pandemic. Lastly, those who answered "no" for both periods were classified as students who did not practice SM at any point in their lives.

Independent variables

The independent variables were qualitative and categorized as follows: nominal variables (gender, age, ethnicity, state of residence, place of residence, college course, type of university, and occupation) and ordinal variables (family income and health status). Additionally, other independent variables were collected as dichotomous by asking participants about their health and habits (e.g., *"Do you have a chronic disease?"* and *"Do you use any continuous medication?"*) with "yes" or "no" response options.

Statistical analysis

Data was analyzed using SPSS version 20 and expressed as absolute and relative frequencies. Associations between the practice of self-medication and demographic, health, and lifestyle variables before and during the pandemic were tested using the Chi-square and Fisher's exact tests, with significance set at $p < 0.05$.

To assess the variables that may have influenced students' decision to stop SM during the pandemic, bivariate and multivariate analyses were conducted using the Poisson test. To eliminate confounders, regression was performed in four levels: First level (sociodemographic characteristics) – age, gender, income, race, and household composition before the pandemic; second level (academic characteristics) – occupation, type of university, and field of study; third level (health characteristics) – presence of chronic or psychiatric diseases, use of

continuous or psychiatric medication, and self-perceived health status before the pandemic and fourth level (pandemic-related characteristics) – household composition during the pandemic, perceived decline in health during the pandemic, social distancing behavior, and identification of new symptoms or diseases.

Initially, each independent variable was analyzed in a crude model by individually crossing it with the dependent variable (stopped SM during the pandemic: "yes" or "no"). Variables with $p < 0.200$ were retained in the adjusted model. Associations were considered significant at $p < 0.05$ and were presented in tables with their prevalence ratios (PR) and 95% confidence intervals (95% CI).

Descriptive analyses of symptoms, sources of information, and reasons for practicing SM were expressed as absolute and relative frequencies.

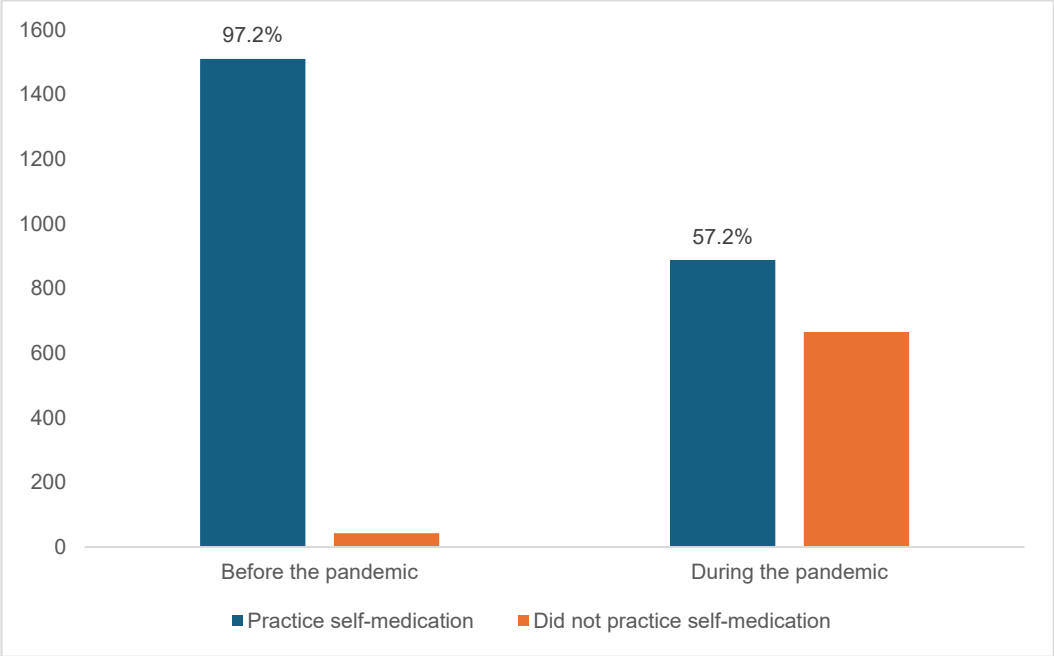
Ethical approvals

The study was approved by the Research Ethics Committee at Universidade Federal do Rio Grande (CEPAS-FURG) under approval number 4.127.866/2020. Participation was strictly voluntary, and participants were presented with a free and informed consent form on the first page of the online questionnaire. This form explained the research, including its risks and participants' rights. The questionnaire was only accessible to those who agreed to participate by providing their consent.

Results

SM practice and sociodemographic, clinical and lifestyle characteristics

Figure 1: Frequency* of self-medication practice by university students in the periods before and during the COVID-19 pandemic.



*A comparative graph bar chart illustrates the percentage of university students reporting self-medication practices before and during the COVID-19 pandemic. The blue bars represent the students who confirm self-medication practice, been possible to identify the decrease of self-medication by comparing the two periods – before and during COVID-19 pandemic.

A total of 1,587 answers were collected, among them 34 were removed based on the exclusion criteria. So, 1,553 valid answers were used, and 1,510 university students related practice SM in any period of life before the COVID-19 pandemic (Figure 1). With the pandemic scenario this rate had decreased to 888 students.

The sociodemographic characteristics of the sample were divided by the practice of SM in the two periods – before and during the COVID-19 pandemic. Students between 18 and 29 years practice more SM before and during pandemic. Women also practice more SM during both periods before and during pandemic (Table 1).

Before COVID-19 pandemic SM was more practiced by Caucasians, students who dedicated exclusively to the graduation course, those who course other graduation courses that are not health or biological and subjects with income between BRL $2,101 - $5,250. However, during the pandemic period the students who studied at a public university were more adept to SM practice (Table 1).

Table 1: Association[#] between sociodemographic characteristics and the practice of self-medication before and during the pandemic (N/%).

*Chi-square test

Variable	Self-medication practice before the pandemic		*p* value	Self-medication practice during the pandemic		*p* value
	Yes	No		Yes	No	
Age (years)						
18-29	1335 (88.4)	31 (72.1)	**0.001**	794 (89.4)	572 (86.0)	**0.042**
30 or more	175 (11.6)	12 (27.9)		94 (10.6)	93 (14.0)	
Gender						
Female	1092 (72.3)	15 (34.9)	**<0.001**	681 (76.7)	426 (64.1)	**<0.001**
Male	418 (27.7)	28 (65.1)		207 (23.3)	239 (35.9)	
Race						
Caucasian	1241 (82.2)	29 (67.4)	**0.014**	718 (80.9)	552 (83.0)	0.277
Non-Caucasian	269 (17.8)	14 (32.6)		170 (19.1)	113 (17.0)	
Occupation						
Work/Internship	733 (48.5)	28 (65.1)	**0.032**	423 (47.6)	338 (50.8)	0.213
Just studying	777 (51.5)	15 (34.9)		465 (52.4)	327 (49.2)	
University						
Public	1058 (70.1)	32 (74.4)	0.334	640 (72.1)	450 (67.7)	**0.034**
Private	452 (29.9)	11 (25.6)		248 (27.9)	215 (32.3)	
Graduation area						
Health and biological	645 (42.7)	9 (20.9)	**0.004**	389 (43.8)	265 (39.8)	0.118
Other	865 (57.3)	34 (79.1)		499 (56.2)	400 (60.2)	
Income (BRL)						
Up to 2,100	508 (33.6)	24 (55.8)		294 (33.1)	238 (35.8)	
2,101-5,250	614 (40.7)	14 (32.6)		377 (42.5)	251 (37.7)	
5,251-10,450	231 (15.3)	4 (9.3)	**0.016**	131 (14.8)	104 (15.6)	0.312
More than 10,451	157 (10.4)	1 (2.3)		86 (9.7)	72 (10.8)	

#It presents a cross-tabulation comparing sociodemographic variables with self-medication practices among university students before and during the COVID-19 pandemic. Statistical significance was evaluated using Chi-square and Fisher's

Exact tests, where appropriate. The table highlights the distribution of students practicing and not practicing self-medication across different sociodemographic categories, providing insights into potential associations between these variables and self-medication behavior in each period. P-values indicate the strength of the relationships, with values less than 0.05 considered statistically significant.

Clinical and lifestyle characteristics reported by the participants were also divided in the same two periods of SM – before and during the pandemic (Table 2). Students that do not have a chronical disease practice more SM before and during pandemic, same as noticed for students do not have psychiatric disease in both period. Students that considered its own health as excellent or good also practice more SM in both period and same happened with students that notice a decrease in its health status for some reason. Also, students that do not have a new disease or symptom during pandemic practice more SM before and during the pandemic periods. Living with family or friends was associated with a higher practice of SM only during COVID-19 pandemic.

Table 2: Association* between clinical and lifestyle characteristics and the practice of self-medication before and during the pandemic.

*Chi-square test / @n = 566 / #Fischer's exact test

Variable	Self-medication practice before the pandemic		*p* value	Self-medication practice during the pandemic		*p* value
	Yes	**No**		**Yes**	**No**	
Having a chronical disease						
Yes	560 (37.1)	4 (9.3)	**<0.001**	347 (39.1)	217 (32.6)	**0.009**
No	950 (62.9)	39 (90.7)		541 (60.9)	448 (67.4)	
Having a psychiatric disease						
Yes	413 (27.4)	2 (4.7)	**0.001**	265 (29.8)	150 (22.6)	**0.001**
No	1097 (72.6)	41 (95.3)		623 (70.2)	515 (77.4)	
Using continue medicine@#						
Yes	390 (69.5)	4 (80.0)	1.000	250 (71.8)	144 (66.1)	0.159
No	171 (30.5)	1 (20.0)		98 (28.2)	74 (33.9)	
Self-understanding health before the pandemic						
Excellent/Good	1107 (73.3)	40 (93.0)		620 (69.8)	527 (79.2)	
Regular	348 (23.0)	3 (7.0)	**0.014**	232 (26.1)	119 (17.9)	**<0.001**
Bad/Very bad	55 (3.6)	0 (0.0)		36 (4.1)	19 (2.9)	
Realize a decrease in health status						
Yes	778 (51.5)	13 (30.2)	**0.006**	533 (60.0)	258 (38.8)	**<0.001**
No	732 (48.5)	30 (69.8)		355 (40.0)	407 (61.2)	
Resided before pandemic						
Alone	236 (15.6)	5 (11.6)	0.475	123 (13.9)	118 (17.7)	**0.036**
With family or friends	1274 (84.4)	38 (88.4)		765 (86.1)	547 (82.3)	
Resided during pandemic #						
Alone	116 (95.1)	6 (14.0)	0.143	63 (7.1)	59 (8.9)	0.198
With family or friends	1394 (92.3)	37 (86.0)		825 (92.9)	606 (91.1)	
Social distancing #						
Not realized	50 (3.3)	3 (7.0)		29 (3.3)	24 (3.6)	
Just went out to work and essential activities	1308 (86.6)	37 (86.0)	0.359	769 (86.6)	576 (86.6)	0.914
Fulfilled social distancing and lockdown	152 (10.1)	3 (7.0)		90 (10.1)	65 (9.8)	
Had a new disease or symptom during pandemic						
Yes	184 (12.2)	21 (48.8)	**<0.000**	65 (7.3)	140 (21.1)	**<0.000**
No	1326 (87.8)	22 (51.2)		823 (92.7)	525 (78.9)	

#Table 2 shows a cross-tabulation comparing clinical variables and COVID-19-related factors with self-medication practices among university students before and during the pandemic. Associations were analyzed using Chi-square and Fisher's Exact tests, depending on the data distribution. The table presents the frequency and percentage of students

practicing or refraining from self-medication across different clinical conditions and pandemic-related factors. P-values indicate the significance of these associations, with values below 0.05 considered statistically significant.

SM practice and behavior changes

The self-report of the SM allowed a comparison between the decision in life routine before and during the pandemic period. In this way, the study identified the majority of the participants keeping practice SM during the pandemic, a small part reporting to stop SM and only 0.1% starting this practice.

The change of practice of SM is presented in table 3 by associating the characteristics with the part of the sample that practice SM before and stopped it during the pandemic. In the adjusted analysis,being female, study at a public university, realize a decrease in health status and had a new disease or symptom during COVID-19 pandemic were associated with a lower probability to stop SM practices during the pandemic. Instead, the students that resided alone before pandemic were associated with a higher probability to stop the practice (Table 3).

Table 3: Poisson's regression* of sociodemographic, clinical and lifestyle characteristics associated with people that stopped the practice of self-medication during the pandemic.

Level	Variables	Crude analysis		p value	Adjusted analysis		p value
1	**Age**						
	18-29	0.931	(0.776-1.115)	0.436			
	30 or more	1					
1	**Gender**						
	Female	0.763	(0.674-0.864)	**<0.001**	0.767	(0.6777-0.869)	**<0.001**
	Male	1			1		
1	**Race**						
	Not Caucasian	0.864	(0.729-1.025)	0.094	0.859	(0.726-1.017)	0.077
	Caucasian	1			1		
1	**Resided before pandemic**						
	Alone	1.197	(1.028-1.393)	**0.020**	1.175	(1.008-1.369)	**0.039**
	With family or friends	1			1		
1	**Income (BRL)**						
	Until $2,100.00	0.901	(0.735-1.104)	0.447			
	$2,101.00 to $10,450.00	0.882	(0.727-1.071)				

	Up to $10,451.00	1					
2	**Occupation**						
	Job or internship	1.036	(0.917-1.170)	0.572			
	Just study	1					
2	**University**						
	Public	0.862	(0.759-0.979)	**0.023**	0.853	(0.751-0.969)	**0.015**
	Private	1			1		
2	**Graduation area**						
	Health courses	0.956	(0.844-1.082)	0.474			
	Non-health courses	1					
3	**Having a chronical disease**						
	Yes	0.909	(0.798-1.035)	0.149	0.986	(0.802 - 1.012)	0.203
	No	1			1		
3	**Having a psychiatric disease**						
	Yes	0.846	(0.730-0.980)	**0.026**	0.801	(0.637-1.006)	0.056
	No	1			1		
3	**Using continue medicine**						
	Yes	0.836	(0.671-1.041)	0.110	0.822	(0.661-1.023)	0.080
	No	1			1		
3	**Self-understanding health before the pandemic**						
	Bad/Very bad	0.810	(0.559-1.173)	**0.006**	0.739	(0.465-1.184)	0.211
	Regular	0.773	(0.656-0.910)		0.843	(0.664-1.070)	
	Excellent/Good	1			1		
4	**Resided during pandemic**						
	Alone	1.086	(0.877-1.346)	0.449			
	With family or friends	1					
4	**Realize a decrease in health status**						
	Yes	0.622	(0.548-0.706)	**<0.001**	0.615	(0.490-0.771)	**<0.001**
	No	1			1		
4	**Social distancing**						
	Not realized	1.040	(0.710-1.523)	0.979			
	Just went out to work and essential activities	1.014	(0.826-1.246)				
	Fulfilled social distancing and lockdown	1					
4	**Had a new disease or symptom during pandemic**						
	Yes	0.636	(0.555-0.728)	**<0.001**	0.680	(0.522-0.886)	**0.004**
	No	1			1		

*It is presented the results of a Poisson Regression analysis evaluating the association between demographic and clinical variables and the reduction of self-medication practices among university students during the COVID-19 pandemic. The first column shows the crude analysis, where each variable is analyzed individually for its direct relationship with the outcome of reduced self-medication. The second column presents the adjusted analysis, where a group of variables that influence the reduction of self-medication independently are considered together to determine the influence of the variables' group. The reported values include the respective incidence rate ratios (IRRs) with their confidence intervals (CIs) and p-values, indicating the strength and significance of the associations.

Table 4: Comparison* of self-medication practice before and during the pandemic according to specific symptoms (n/%).

Symptoms	SM practice before pandemic	SM practice during pandemic
Headache	1309 (86.7)	720 (81.1)
Toothache	480 (31.8)	68 (7.7)
Muscle pain	1057 (70.0)	413 (46.5)
Fever	947 (62.7)	90 (10.1)
Flu	1165 (77.2)	252 (28.4)
Sore throat	1084 (71.8)	215 (24.2)
Cough	805 (53.3)	92 (10.4)
Allergies	838 (55.5)	255 (28.7)
Vomit	526 (34.8)	40 (4.5)
Diarrhea	477 (31.6)	51 (5.7)
Nausea	612 (40.5)	123 (13.9)
Indigestion	698 (46.2)	157 (17.7)
Heartburn	721 (47.7)	175 (19.7)
Cramps	841 (55.7)	329 (37.0)
Use of morning-after pill	229 (15.2)	23 (2.6)
Use of contraceptive pills	480 (31.8)	142 (16.0)
Insomnia	398 (26.3)	145 (16.3)
Lack of concentration	262 (17.3)	47 (5.3)
Fatigue	349 (23.1)	93 (10.5)
Anxiety	457 (30.3)	145 (16.3)
	n=1510	n=888

*This table lists the symptoms for which university students reported self-medicating and compares the frequency (absolute and relative) of students engaging in self-medication for each symptom before and during the COVID-19 pandemic. The table provides a detailed breakdown of how the prevalence of self-medication for specific symptoms changed between the two periods. Percentages are calculated relative to the total number of students practicing self-medication in each period.

Symptoms related with SM behavior before and during pandemic period

The symptoms target of SM were also analyzed by periods and are shown in table 4. Headache was the main symptom in both periods. Flu, sore throat, muscle pain, fever, cramps, allergies and cough were the symptoms related for at least half of the students that practice SM before the pandemic. During the pandemic period the symptom more related after headache was muscle pain.

Information sources to practice SM

Family or friends' opinions were the main source of information for SM practice before the pandemic period, followed by pharmacists, internet and a previous prescription (Table 5). During the pandemic period, the internet had an increase of adherence by the students, followed the same principal information sources: family or friends' opinion, pharmacist and previous prescription.

Other information sources related were the consultation with other health professionals, pharmacy clerk, books, graduation knowledges and medicines directions.

Table 5: Comparison* of the information sources to practice self-medication before and during the pandemic (n/%).

Information sources	SM practice before pandemic	SM practice during pandemic
Pharmacist	661 (16.5)	242 (14.3)
Other health professional	285 (7.1)	151 (8.9)
Pharmacy clerk	291 (7.3)	47 (2.8)
Internet	610 (15.2)	322 (19.1)
Books	79 (2.0)	58 (3.4)
Graduation knowledges	280 (7.0)	126 (7.5)
Family or friends' opinion	689 (17.2)	301 (17.9)
Previous prescription	400 (10.0)	173 (10.3)
Medicine directions	8 (0.2)	6 (0.4)

* This table presents the sources of information used for self-medication among university students and compares their preference in two periods: before and during the COVID-19 pandemic. The table shows the absolute and relative frequencies of students who cited each information as influencing their self-medication decisions. This comparison highlights changes in the reliance on different information sources between the two periods, reflecting shifts in student behavior and information-seeking patterns during the pandemic.

Reasons for SM practice

Table 6: Comparison* of the reasons to practice self-medication before and during the pandemic (n/%).

Reasons	SM practice before pandemic	SM practice during pandemic
The symptoms are easily to solve	867 (29.6)	533 (29.0)
Have had the problem before and know what to use	1142 (38.9)	977 (53.2)
Cannot afford a doctor or other health professional	348 (11.9)	92 (5.0)
Do not have time to go to a doctor or other health professional	178 (6.1)	0
Appointment with long waiting period or full and time-consuming healthcare center	345 (11.8)	0
Afraid of doctors and health professionals	52 (1.8)	136 (7.4)
In the health centers only attended COVID-19 cases or emergencies		98 (5.3)

*Table 6 displays the reasons reported by university students for engaging in self-medication and compares their preferences in two periods: before and during the COVID-19 pandemic. The table provides absolute and relative frequencies of students citing each for self-medicating. This comparison reveals shifts in the motivations behind self-medication practices during the pandemic, highlighting changes in students' decision-making factors across the two periods.

The main reason reported to SM is “have had the problem before and know what to use” in both periods, followed by “the symptoms are easily to solve”, “cannot afford a doctor or other health professional” and “afraid of doctors and health professionals” (Table 6).

Two reasons were related only by the period before the pandemic: “do not have time to go to a doctor or other health professional” and “appointment with long waiting period or full and time-consuming health care center”. During the COVID-19 pandemic a reason related by the students was “in the health centers only attended COVID-19 cases or emergencies”.

Discussion

SM is a worldwide practice that poses problems for both the population and health systems [30]. In this study, a high prevalence of SM was identified, with 97.2% of the graduate students practicing it. This data is also higher than that found in the most recent global review on SM, which reported a prevalence of 70.1% (95% CI: 64.3–75.4%) [22]. However, other Brazilian studies have demonstrated prevalences ranging from 38.8% to 86.4% of SM among students, but all of them are lower than ours [7, 23, 31]. Therefore, while the literature shows a large variation in SM practices due to cultural, political, and economic differences between countries, our findings are still concerning [26]. It is important to highlight, however, that in our study, SM was defined as the consumption of any medicine without a specific prescription at any point in life, which may have led to an overestimation of the data.

Although this elevated rate of SM represents a risk to students' health due to the adverse outcomes that can result from the practice, such as drug toxicities, misuse and abuse, dangerous interactions, antibiotic resistance, and other issues like gastrointestinal symptoms, rashes, and even neurological problems [32–35]. The occurrence of adverse effects related to medicines used without professional guidance ranges from 5% to 36%. The severity of these adverse effects must also be considered [35]. In many cases, the practice of SM occurs to avoid an appointment with a doctor or a visit to clinics or hospitals; however, misuse, overdose, or adverse effects may require a higher level of attention and could lead to a potential overload of the healthcare system [28, 36].

According to our results, during the COVID-19 pandemic, self-reported SM decreased, with 57.2% of the students reporting the practice. This prevalence is lower than that found in a study conducted in Brazil in 2021, still during the pandemic, which reported 69.4% of SM in the general population [37]. However, our finding indicates a higher prevalence than a global systematic review with meta-analysis, which indicated 49.0% (95% CI: 43–54%) of SM practice during the pandemic period [38]. At this point, our rate of self-medication during the COVID-19 pandemic is closer to the results presented in the literature, considering the crude values and their confidence intervals.

This same SM review presents the student population as the most frequent practitioners of SM, comparing different professions and occupations, and suggests an increase in SM among college students, which contrasts with our findings that demonstrated a decrease when comparing the periods before and during the COVID-19 pandemic [38].

During the pandemic, the population experienced social distancing and remote work and academic activities. Many scenarios occurred in the pandemic context, including an increase in psychological symptoms related to health concerns, among others [16, 39, 40]. Additionally, a decrease in diseases such as influenza and respiratory infections was observed due to hand and object sanitization and social distancing measures [41, 42]. Thus, the decline in self-medication rates during the pandemic may be linked to a combination of factors, including behavioral changes, reduced incidence of common illnesses, and heightened awareness of health risks.

In our findings, younger age (between 18 and 29 years) and female sex are associated with the practice of SM in both periods, before and during the pandemic. It is suggested that maturity and life experience may influence the decision to use medicines without a prescription or guidance [43]. Therefore, we suggest that younger individuals are more likely to practice SM than older people. Regarding female sex, some studies propose that women practice more SM due to hormonal variations, menstruation, pregnancy, specific diseases, and symptoms such as headaches and cramps [20, 44, 45]. Additionally, women are often responsible for family and daily activities, which adds a need to maintain good health, even during challenging times like the COVID-19 period [12, 46]. Furthermore, the association is observed in both periods, before (recall period) and during the pandemic, and Poisson's analysis also identified a lower probability of women stopping SM during the pandemic, demonstrating a stronger impact of female sex on adherence to the use of medicines without a prescription.

The Caucasian race and intermediate income were also identified in students who practiced more SM before the pandemic. The influence of race on SM practice is not well-established in the current literature, but it is suggested that there may be an association with the higher socioeconomic and demographic status of the Caucasian population [35]. During the COVID-19 pandemic,

purchasing power became an important factor in promoting healthcare, including the acquisition of medicines and, consequently, the practice of SM [13].

Some academic characteristics of the students were also associated with SM. Students who dedicate themselves exclusively to their studies practice more SM before the pandemic, and this was also observed in those enrolled in courses outside the health and biological areas. Students are a population targeted for SM investigations, as the literature has shown their adherence to the practice [7, 23, 31, 38]. In this context, the ease of researching and understanding information about medicines may contribute to this practice among students [12]. Additionally, health students, who attend hospitals, clinics, and other healthcare settings, have easier access to appointments with healthcare professionals, prescriptions, and medical knowledge compared to students from other degree programs, as well as to medicines.

Beyond that, during the pandemic period, different types of universities were identified as a factor associated with SM, showing that students from public universities were more likely to engage in SM. In Brazil, the adaptation to online education was slow during the first semester of the pandemic. Additionally, public universities made the transition even later than private ones, which could have affected students' routines and psychological well-being, potentially influencing their self-medication practices [47].

According to clinical and health characteristics, students who have chronic or psychiatric diseases were more likely to practice SM before the pandemic, and this behavior changed during the pandemic. Generally, people with diagnosed diseases are likely to pay more attention to medications due to potential interactions or adverse effects, which are typically described in the package insert information. Additionally, as previously mentioned, the rate of infectious diseases decreased during the pandemic, which may have impacted the need to consume medicines for those who already had a disease [41, 42]. Furthermore, students who noticed a new symptom or disease during the pandemic reported lower adherence to SM, and this profile was also observed before the pandemic. This suggests that people with existing health conditions may avoid using medications without a prescription or monitoring by a healthcare professional.

During both periods, before and during the pandemic, self-perceived health as good or excellent, as well as noticing a decrease in health status, were associated with more SM practice. One of the medications commonly consumed through SM, as described in the literature, is vitamins. During the COVID-19 pandemic, vitamins were used by the population to boost health and protect against the virus [12, 20, 35].

Living with family or friends was also identified in students who practiced SM more during the COVID-19 pandemic period. Additionally, students who lived alone showed a higher probability of stopping SM. Besides living with companions, which is more indicative of social behavior and protection of the individual, SM during the COVID-19 pandemic followed a different trend. In Brazil, unnecessary encouragement to use Chloroquine/Hydroxychloroquine and other medications and treatments was promoted by the government, which may have influenced families to use these medications or others to protect against the coronavirus [48, 49]

Students who reported living alone had a higher probability of stopping SM, reinforcing the hypothesis of family influence. During the COVID-19 pandemic, a higher lethality of the disease was established in older individuals, so students living with older relatives may have practiced more SM in an attempt to protect them [50, 51].

The symptoms reported in our study are similar to those indicated in the literature about general SM, such as headaches and muscle pain [3, 9, 20, 25, 52]. These symptoms are repeatedly associated with SM due to the ease of obtaining medicines without a prescription to relieve them, as well as their lower complexity [3, 14, 20, 35]. The medicines commonly used for these symptoms are known as “Over the Counter (OTC)” drugs, which can be easily purchased in supermarkets or drugstores (outside of Brazil) and in Brazilian pharmacies without the assistance of any health professional, promoting their use by the population. The ease of obtaining OTC drugs encourages SM practice, but it is also associated with the potential for adverse effects or toxicity [53–55].

Flu, sore throat, and fever also showed high adherence to SM by the students before the pandemic, but not during it. This behavior may be due to the

reduction of infectious diseases during the pandemic, promoted by social distancing and hygiene protocols such as the use of disinfectants and hand sanitization [11, 35, 41, 42].

Family or friends' opinions were the most consulted information sources by the students, highlighting the social influence on medicine consumption. Asking for the opinion of close people has already been identified in the literature as a behavior strongly influencing SM, as well as consuming the same medicines as family members[14, 15]. As previously mentioned, consuming medicines without a health professional's recommendation can potentially cause adverse effects and medicine-related problems for the individual.

Besides, during the pandemic period, the internet became an increasingly used source of information for SM practice, reflecting the rapid spread of information. However, it is important to remember that the COVID-19 pandemic was a time full of misinformation, often referred to as "fake news." The use of a source like the internet, where anyone can post, publish, and share information, can be dangerous to individuals' health. Furthermore, during the pandemic, many studies about potential treatments were published in reliable sources, but the information was often misinterpreted and widely disseminated [46, 56].

Although the pharmacist was the third most cited information source by the students, this is positive because this professional is qualified to provide the correct guidance, marking this as a responsible SM practice. During the COVID-19 pandemic, pharmacists were among the health professionals who continued to work on the frontline and had to provide a lot of information about prevention and protection against the coronavirus and other health issues due to the shortcomings of the public health system [57]. Even during the COVID-19 pandemic, the main reasons for SM practice listed by the students were the simplicity of the symptoms and the fact that they already knew what to use because the problem had occurred before. These two reasons are mentioned by the World Health Organization in the SM concept due to their stronger link to medicine consumption [1]. The need to quickly address health problems is associated with the ease of obtaining medicines, as described above. Therefore, students identify their own symptoms and use the medicine they are already

familiar with. However, it is important to remember that all medicines have the potential to cause adverse effects, even if the person has used them before.

Study limitations

It is important to highlight that the COVID-19 pandemic lasted more than three years, and our study was conducted during its first semester. This may impact the results, as it was an initial experience for the population, and our study sampling occurred in a short period, which may not have allowed for the development of more severe symptoms. Additionally, during the study period, there were no vaccines or approved treatments for treating or preventing coronavirus infection. Furthermore, our recall period for SM practice was broad, using the question "Do you practice self-medication at any point in your life?" This could increase the possibility of recall bias due to the general nature of the question. Therefore, these factors may represent limitations of our research.

Conclusion

Our findings suggest that the pandemic context influenced self-medication behaviors among university students, potentially reflecting broader behavioral responses to stress, and had a direct impact on SM practices with a notable reduction or cessation of SM during this period.

These results highlight the complex interplay of personal, social, and health-related factors that shaped SM behaviors during the pandemic. Monitoring risk factors associated with SM is crucial for developing effective educational interventions. The university student population shows online connectivity and an easily accessible information system, characteristics that can be leveraged for health education aimed at self-medication.

Authors contributions

Karoline Brizola de Souza contributed to the conceptualization of the project, data curation, formal analysis of the results, methodology, validation and writing.

Eduarda de Lemos Wyse contributed to data curation, methodology and validation.

Raif Gregorio Nasre Nasser contributed to data curation, methodology and validation.

Ana Paula Veber contributed to the formal analysis of the results and writing - proofreading and editing.

Ana Luiza Muccillo-Baisch contributed to the conceptualization of the project, methodology and validation.

Bruno Dutra Arbo contributed to project conceptualization, methodology and validation.

Flávio Manoel Rodrigues da Silva Júnior contributed to the conceptualization of the project, formal analysis of the results and writing - revision and editing.

Mariana Appel Hort contributed to the conceptualization of the project, data curation, methodology, validation, formal analysis of the results, supervision, project administration and writing - review and editing.

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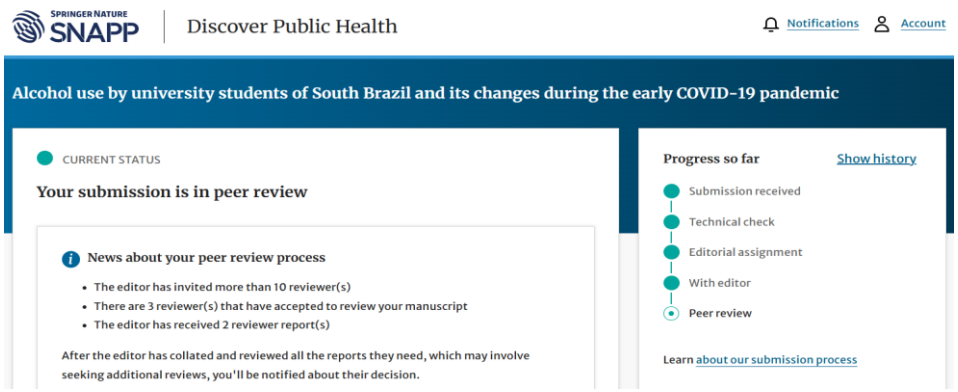
6.4. Manuscrito 2

Manuscrito submetido à revista “Discover Public Health”



“Alcohol use by university students of South Brazil and its changes during the early COVID-19 pandemic”

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Abstract

Introduction: Alcohol is the most commonly consumed psychoactive substance worldwide, with university students representing a subgroup characterized by elevated consumption rates. The COVID-19 pandemic triggered significant behavioral shifts across the general population, with students particularly vulnerable to its psychosocial impacts. In this context, the present study aimed to assess alcohol consumption patterns among university students and to examine the influence of the early stages of the COVID-19 pandemic on these behaviors. **Materials and Methods:** A cross-sectional study was conducted between July and November 2020 using an online questionnaire. The instrument collected data on students' lifestyle habits, health status, and substance use, both prior to and during the early phase of the COVID-19 pandemic. **Results:** A total of 1,553 valid responses were analyzed, of which 99.93% reported alcohol consumption. The most frequently reported pattern of use was weekly consumption. During the pandemic, 248 students indicated an increase in their alcohol intake. Students who perceived a decline in their overall health status during the early pandemic period were less likely to report increased alcohol consumption, whereas those with a confirmed COVID-19 diagnosis demonstrated a higher likelihood of increased use. **Conclusion:** The findings reveal a high prevalence of alcohol consumption among university students and suggest that periods marked by abrupt behavioral and routine changes, such as the COVID-19 pandemic, may significantly influence substance use patterns within this population.

Key words: alcohol use; university students; alcoholic beverages; COVID-19 pandemic; psychoactive substances.

Introduction

Declared a pandemic in March 2020, COVID-19 brought significant changes to daily life [1]. To control the spread of the disease, measures such as hand and object sanitization, the use of face masks, and the implementation of social distancing protocols were required [2]. These public health interventions significantly impacted social, professional, and educational contexts for a substantial portion of the population [3, 4].

Young adults were particularly affected during this period due to the closure of schools and universities, reduced contact with family and friends, and the suspension of collective leisure activities such as movie theaters, concerts, and parties [5]. According to Zysset *et al.*, “The daily structure of young adults changed drastically,” which may have influenced their personal lives and behaviors [3].

The university years are often particularly challenging for students, as this period typically involves the development of independence and a growing sense of responsibility for one’s actions. In many cases, it also coincides with leaving the parental home and becoming physically distant from family support systems [6, 7]. The COVID-19 pandemic may have intensified these challenges, potentially leading to changes with long-lasting impacts on students' lives. Several studies have reported alterations in physical activity patterns, nutritional habits, and overall health status during this period [8, 9]. Moreover, the emergence of mental health symptoms—such as loneliness, anxiety, and depression—has been associated with pandemic-related restrictions, some of which have also been linked to increased consumption of psychoactive substances [5, 10–13].

Among young people, alcohol—primarily through alcoholic beverages—is one of the most commonly consumed substances [14]. Alcohol is a psychoactive and toxic agent with a high potential for dependence [14]. Its widespread use is evident in Brazil, where it ranks as the most frequently consumed substance among youth, followed by tobacco, marijuana, and stimulants [15]. Due to its well-documented central nervous system depressant effects, many individuals resort to alcohol and other psychoactive substances as a coping mechanism for

negative emotions, stress, anxiety, or depression [16, 17]. However, this seemingly "common" use poses significant risks for children and adolescents, whose neurodevelopmental processes are still ongoing. Early exposure can result in brain damage, impaired personality development, and the onset of various mental disorders or diseases [18, 19].

It is important to note that even low levels of alcohol consumption can pose health risks, although chronic use and heavy episodic drinking are more strongly associated with adverse health outcomes [14]. Additionally, alcohol use is implicated in more than 200 diseases, injuries, and other health-related conditions, highlighting its significant burden on public health [14]. Recent data have shown a 13% increase in alcohol-attributable deaths among individuals aged 20–39 years compared to 2019, a period during which the COVID-19 pandemic also contributed to notable lifestyle changes [14]. Accordingly, the COVID-19 pandemic has been associated with an overall rise in mortality from various causes, including alcohol-related deaths—such as those due to alcoholism and alcoholic liver disease—primarily due to the heightened health risks associated with alcohol consumption [20].

Furthermore, alcohol use is linked to negative social, economic, and cognitive outcomes, which may hinder academic performance among students [21]. It has also been consistently associated with engagement in high-risk behaviors, including unprotected sexual activity and interpersonal violence within romantic or dating contexts. These behaviors substantially elevate the risk of exposure to sexually transmitted infections (STIs), a particularly concerning issue given their already high prevalence among adolescents and young adults—the predominant demographic in university settings [16, 22]. Moreover, alcohol consumption has been linked to increased rates of criminal activity and domestic violence or abuse, patterns that were further exacerbated during the COVID-19 pandemic [19, 23].

Despite being aware of the harmful and potentially dangerous consequences of alcohol use, many young people continue to drink, driven by social pressures, the pursuit of relief, pleasure, and the perceived positive effects of intoxication [24, 25]. Based on this context, the aim of this study was to analyze alcohol consumption among university students in southern Brazil and to assess

its increase during the lockdown period in the early stages of the COVID-19 pandemic.

Materials and Methods

Study Design

This is a cross-sectional study conducted between July and November 2020 with undergraduate students from Southern Brazil, using an online, self-administered questionnaire.

Ethical Approval and Compliance

The study was approved by the Research Ethics Committee of the Federal University of Rio Grande (CEPAS-FURG), under approval number 34030720.8.0000.5324, issued in 2020. The study adhered to the principles of the Declaration of Helsinki throughout its experimental approach involving human participants.

All participants were volunteers and did not receive any form of compensation. On the first page of the questionnaire, participants were presented with an informed consent form outlining the objectives of the study, as well as the associated risks and their rights. Only individuals who provided informed consent were granted access to complete the questionnaire.

Sample Size and Eligibility Criteria

The sample size was determined based on the total number of students enrolled in undergraduate programs at higher education institutions in the Southern region of Brazil (comprising the states of Paraná, Rio Grande do Sul, and Santa Catarina). This information was obtained from the most recent census conducted in 2018 by the *Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira* (National Institute of Educational Studies and Research Anísio Teixeira), available at http://portal.inep.gov.br/basica-censo-

escolar-sinopse-sinopse. The sample size was calculated using the online platform https://comentto.com/calculadora-amostral/, considering a 5% margin of error, a 95% confidence interval, and assuming a heterogeneous population. According to the census, a total of 1,428,267 undergraduate students were enrolled in the region, resulting in a minimum sample size of 1,152 participants. To account for potential losses, an additional 10% was added, raising the required sample size to 1,268 students.

To be eligible for participation, individuals had to meet the following inclusion criteria: be at least 18 years old, reside exclusively in one of the Southern states of Brazil (Paraná, Rio Grande do Sul, or Santa Catarina), be enrolled in an undergraduate program, and provide informed consent by agreeing to participate and completing the questionnaire. Individuals enrolled in high school, technical, or postgraduate programs, as well as those residing outside the Southern region or who did not complete the questionnaire in full, were excluded from the study.

Data Collection

The authors developed a digital questionnaire designed to collect information on sociodemographic characteristics, self-perceived health, and lifestyle behaviors across two distinct time points: the period prior to the COVID-19 pandemic (referring specifically to the time before March 2020, using past-tense phrasing) and the initial phase of the pandemic (data collection concluded in November 2020) [26]. The decision to create a customized instrument was based on the fact that, at the onset of the pandemic, there were no validated or standardized questionnaires addressing the specific context under investigation.

The questionnaire was hosted on the free online platform Google Forms® to ensure broad accessibility while adhering to public health guidelines regarding social distancing during the pandemic period. Participant recruitment was carried out through social media campaigns and emails sent directly to higher education institutions across the Southern region of Brazil.

Prior to launching the main survey, a pilot study was conducted with a convenience sample of students (n = 15) who were not included in the final analysis. This step was undertaken to evaluate the clarity and applicability of the

questionnaire. To ensure confidentiality, all responses were collected anonymously.

Variables

Dependent variables – Alcohol consumption

Alcohol consumption was assessed through the question “Do you consume drugs legally or illegally?” in the section of the questionnaire related to regular life (before the pandemic period), with response options “yes” (with a blank space to specify the drug) or “no”. The increase in alcohol consumption was evaluated in a binary manner using the question “Did you increase this drug consumption during the pandemic?” with “yes” or “no” as response options. The frequency of alcohol consumption was measured for both periods—before and during the pandemic—using the question “How often do you consume?” with the following answer choices: “daily”, “two or more times per week”, “once a week”, “two or more times per month”, and “once a month”.

Independent Variables

The independent variables were collected as follows: nominal variables (gender, age, ethnicity, state of residence, type of residence, college course, type of university, and occupation) and ordinal variables (family income and health status). Additional independent variables related to participants' health and habits were collected as dichotomous variables using yes/no questions (e.g., “Do you have a chronic disease?”, “Did you practice social distancing during the pandemic?”, among others).

Statistical Analysis

Statistical analyses were conducted using SPSS version 20. Frequencies (absolute and relative) of the sample characteristics were calculated, and associations between increased alcohol consumption and demographic, health, and lifestyle variables before and during the pandemic were analyzed using Chi-square and Fisher’s exact tests. Statistical significance was defined as $p < 0.05$.

To identify variables potentially associated with increased alcohol consumption during the pandemic, bivariate and multivariate analyses were performed using Poisson regression. The analysis was structured in two hierarchical levels to control for confounding factors. The first level included sociodemographic variables (age, gender, ethnicity, academic course, type of university, student occupation, and income), while the second level comprised health-related variables (presence of chronic disease, presence of psychiatric disorders, social distancing during the pandemic, household composition during the pandemic, perceived decline in health, onset of new symptoms or illnesses, self-medication during the pandemic, and confirmed COVID-19 diagnosis).

Initially, crude analyses were conducted for each independent variable in relation to the dependent variable (increased alcohol consumption). Variables with associations at $p < 0.200$ were retained for the adjusted model [27]. Final associations were considered statistically significant at $p < 0.05$ and are reported with their corresponding prevalence ratios (PR) and 95% confidence intervals (95% CI).

Results

A total of 1,553 valid responses were included in this study. Most participants were female, white, and aged between 18 and 29 years. Among the students who reported an increase in alcohol consumption, the majority were aged 18–29 years (85.9%), female (72.2%), white (80.2%), enrolled in non-health and non-biological science degree programs (61.7%), attending public universities (71.0%), employed or engaged in internships (54.0%), and reported a monthly family income of up to BRL 2,100 (37.9%) (Table 1). A statistically significant association was observed between increased alcohol consumption and student income ($p < 0.046$).

Table 1: Sociodemographic factors associated with the increase of alcohol consumption during the COVID-19 pandemic (n/%)

	Increase in alcohol's consumption		**p value**
Variables	**Yes**	**No**	
Age			
18 – 29 years	213 (85.9)	1153 (88.4)	0.287
30 or more	35 (14.1)	152 (11.6)	
Gender			
Female	179 (72.2)	928 (71.1)	0.760
Male	69 (27.8)	377 (28.9)	
Race			
White	199 (80.2)	1071 (82.1)	0.530
Non-white	49 (19.8)	234 (17.9)	
Graduation course			
Health and biological sciences	95 (38.3)	559 (42.8)	0.207
Other	153 (61.7)	746 (57.2)	
University			
Public	176 (71.0)	914 (70.0)	0.820
Private	72 (29.0)	391 (30.0)	
Occupation			
Job or internship	134 (54.0)	627 (48.0)	0.096
Just study	114 (46.0)	678 (52.0)	
Income (BRL)*			
Up to 2,100	94 (37.9)	428 (33.6)	**0.046**
2,101-5,250	84 (33.9)	544 (41.7)	
5,251-10,450	36 (14.5)	199 (15.2)	
More than 10,451	34 (13.7)	124 (9.5)	

Statistical test used Chi-square ***Fischer's exact test**

Among all participants, 1,552 students (99.93%) reported consuming alcohol regularly prior to the COVID-19 pandemic. The most frequently reported pattern was alcohol consumption once a week (41.0%), followed by two to three times per month (24.7%) and two or more times per week (22.5%). During the pandemic, of these 1,552 students, 247 reported an increase in their alcohol consumption. The most frequently reported consumption patterns during this period were daily use (8.5%) and two or more times per week (29.9%), both of

which were statistically significant ($p < 0.001$ and $p < 0.003$, respectively). These findings indicate that students began consuming alcohol more frequently during the pandemic (Figure 1).

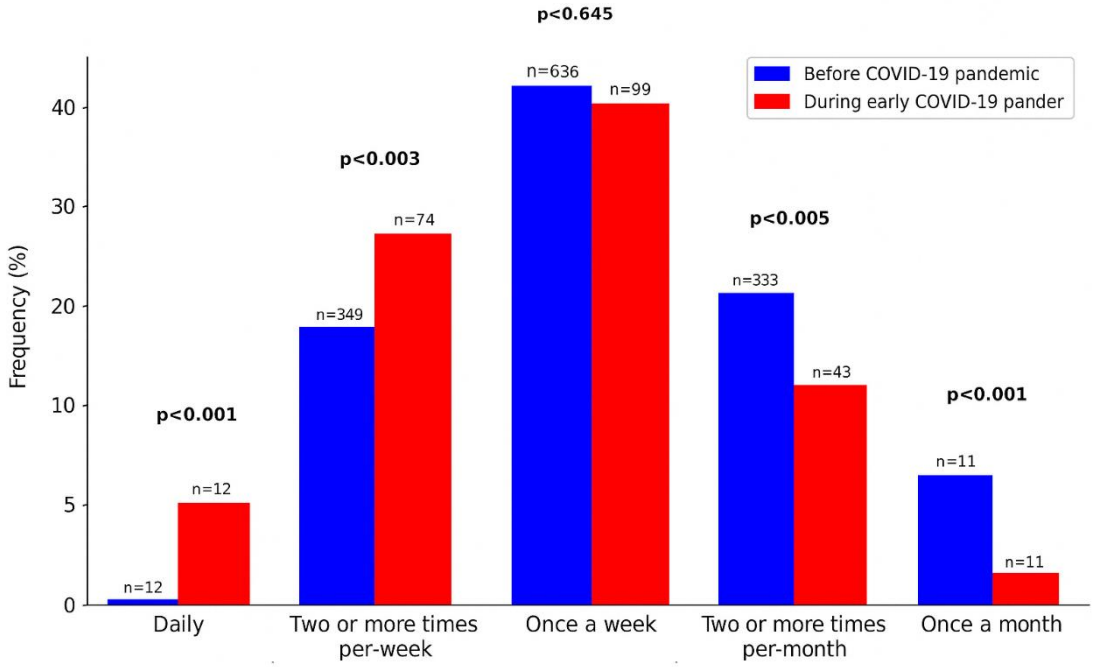

Figure 1: Comparison between alcohol consumption before the pandemic and its increase during an initial period of the pandemic

Furthermore, during the pandemic the increase in the consumption of substances identify alcohol as the most consumed, followed by marijuana (17.8%), cigarette (15.4%) and other drugs (Figure 2).

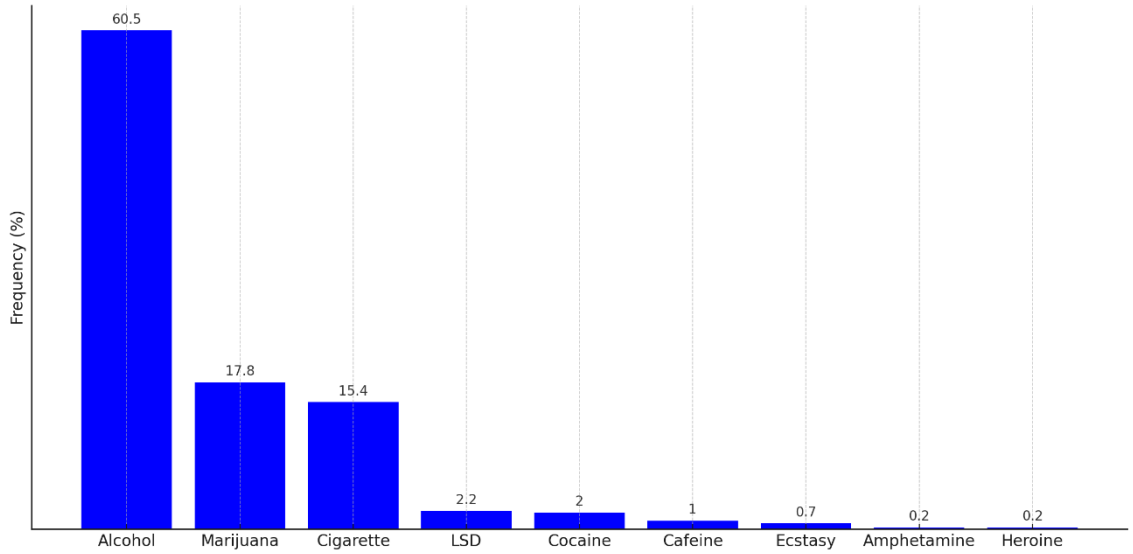

Figure 2: Frequency (%) of students that increase the substances' consumption during COVID-19 lockdown period

Most students did not report having a chronic disease (58.1%) or a psychiatric disorder (68.5%). During the early period of the pandemic, the majority left home only for essential activities (58.9%) and were living with family or friends (90.7%). Additionally, most students perceived a decline in their own health status (60.5%), did not report the onset of new symptoms or diseases (91.1%), and did not receive a confirmed COVID-19 diagnosis (99.2%). However, a significant proportion reported practicing self-medication (62.5%) (Table 2).

Table 2: Clinic and COVID-19 related variables associated with the increase of alcohol consumption

	Increase of alcohol's consumption		p value
Variables	**Yes**	**No**	
Chronic disease			
Yes	104 (41.9)	460 (35.2)	0.052
No	144 (58.1)	845 (64.8)	
Psychiatric disease			
Yes	78 (31.5)	337 (25.8)	0.072
No	170 (68.5)	968 (74.2)	
Social distancing practice*			
No measure of social distancing	11 (4.4)	42 (3.2)	0.114
Go out for work but avoid crowds	75 (30.2)	341 (26.1)	
Go out only for essential activities	146 (58.9)	783 (60.0)	
Doing total isolation	16 (6.5)	139 (10.7)	
Living			
Alone	23 (9.3)	99 (7.6)	0.368
With family or friends	225 (90.7)	1206 (92.4)	
Realize a decrease in health status			
Yes	150 (60.5)	641 (49.1)	**0.001**
No	98 (39.5)	664 (50.9)	
New symptoms or disease during COVID-19 pandemic			
Yes	22 (8.9)	183 (14.0)	**0.031**
No	226 (91.1)	1122 (86.0)	
Practice self-medication during COVID-19 pandemic#			
Yes	155 (62.5)	733 (56.2)	0.069
No	93 (37.5)	572 (43.8)	
COVID-19 infection diagnosticated			
Yes	2 (0.8)	36 (2.8)	0.073
No	246 (99.2)	1269 (97.2)	

Statistical test used Chi-square *Fischer's exact test

#Self-medication is the use of medication without a doctor's or dentist's prescription or without the supervision of a health professional.

In the association analysis, the students who reported a decrease in their own health status during the early period of COVID-19 pandemic presented a lower probability of increasing the alcohol consumption (Exp B=0.927, CI 0.887-0.969; p=0.001) but those who had a diagnosticated COVID-19 infection presented a higher probability of it (Exp B=1.146, CI 1.053-1.247; p=0.002). No more associations were significant (Table 3).

Table 3: Association between sociodemographic, clinical and COVID-19 related characteristics with the increase of alcohol consumption during pandemic

Level	Variables	Crude analysis (Exp B, 95% CI)	p value	Adjusted analysis (Exp B, 95% CI)	p value
1	**Age**				
	18 – 29 years	1.03 (0.96-1.11)	0.308		
	30 or more	1			
1	**Gender**				
	Female	0.99 (0.94-1.04)	0.731		
	Male	1			
1	**Race**				
	White	1.02 (0.96-1.08)	0.508		
	Non-white	1			
1	**Graduation course**				
	Health and biological sciences	1.03 (0.98-1.07)	0.180	1.02 (0.97-1.07)	0.346
	Other	1		1	
1	**University**				
	Public	0.99 (0.94-1.04)	0.768		
	Private	1			
1	**Occupation**				
	Job or internship	0.96 (0.92-1.00)	0.085	0.96 (0.91-1.00)	0.064
	Just study	1		1	
1	**Income (BRL)**				
	Up to 2,100	1.04 (0.95-1.14)	0.062	1.05 (0.96-1.16)	0.056
	2,101-5,250	1.10 (1.01-1.20)		1.11 (1.01-1.21)	
	5,251-10,450	1.07 (0.97-1.19)		1.08 (0.98-1.19)	
	More than 10,451	1		1	
2	**Chronical disease**				
	Yes	0.95 (0.91-1.00)	0.052	0.97 (0.92-1.01)	
	No	1		1	0.216

2	**Psychiatric disease**				
	Yes	0.95 (0.90-1.00)	0.082	1.00 (0.92-1.09)	0.907
	No	1		1	
2	**Social distancing practice**				
	No measure of social distancing	0.88 (0.76-1.02)	0.061	0.87 (0.75-1.01)	0.071
	Go out for work but avoid crowds	0.91 (0.85-0.98)		0.91 (0.84-0.98)	
	Go out only for essential activities	0.94 (0.88-0.99)		0.93 (0.88-0.99)	
	Doing total isolation	1		1	
2	**Living**				
	Alone	0.96 (0.88-1.05)	0.402		
	With family or friends	1			
2	**Realize a decrease in health status**				
	Yes	0.93 (0.89-0.97)	0.001	0.92 (0.88-0.96)	**0.001**
	No	1		1	
2	**New symptoms or disease during COVID-19 pandemic**				
	Yes	1.07 (1.01-1.13)	0.010	1.02 (0.96-1.08)	0.375
	No	1		1	
2	**Practice self-medication during COVID-19 pandemic**				
	Yes	0.96 (0.91-1.00)	0.061	0.97(0.92-1.01)	0.165
	No	1		1	
2	**COVID-19 infection diagnosticated**				
	Yes	1.13 (1.04-1.22)	0.002	1.14 (1.05-1.24)	**0.002**
	No	1		1	

Discussion

Our study revealed an extremely high and alarming prevalence of alcohol consumption among university students. This population is recognized as one of the largest consumers of alcoholic beverages worldwide, partly due to increased independence and physical distance from parental supervision during this life stage [15, 28–30]. Consequently, the college period may represent a critical phase for the initiation or establishment of alcohol consumption patterns. Supporting this, a French study identified alcohol consumption between 18 and 25 years of age as a potential predictor of alcohol dependence in later adulthood, indicating that drinking behaviors in young adults may contribute to health problems later in life [7].

Although most participants did not consume alcohol daily before the pandemic, the World Health Organization (WHO) emphasizes that no level of alcohol consumption is risk-free—the quantity and frequency of alcohol intake determines the extent of harm to the human body [14]. Excessive consumption—whether by volume or frequency—is associated with an increased risk of various diseases, including those affecting the digestive and cardiovascular systems, multiple cancer types, immune system impairment, and mental health and behavioral disorders such as depression and anxiety [14, 30, 31].

Among the substances analyzed, alcohol was the most frequently consumed during the early pandemic period. Nearly the entire sample reported monthly alcohol use, and the reported increase in consumption during the early pandemic is cause for concern. In our study, alcohol consumption increased in both daily frequency and frequency multiple times per week, reflecting a more sustained pattern of use that is known to be detrimental to health and linked to disease development. Similar findings were reported in an Argentinian study, which documented a 20% increase in alcohol consumption among young adults aged 18 to 24 years and a 45% increase among adults aged 35 to 45 years [32].

Furthermore, an increase in alcohol consumption among college students as a coping mechanism for depression and depressive symptoms was observed following the onset of the COVID-19 pandemic, persisting into later phases of the pandemic in 2021. This suggests that prolonged exposure to stringent social

restrictions may influence increased alcohol use [33, 34]. An Australian study involving 4,462 participants found that 30.8% reported drinking “a lot more than normal” during the early pandemic, with depression and stress identified as significant correlates [35]. These data indicate that stressful periods, such as the COVID-19 pandemic restrictions, can modulate alcohol consumption patterns.

Alcohol remains the most commonly consumed psychoactive substance worldwide due to its generally low cost and its social disinhibitory and anxiolytic effects [14]. During the pandemic, university students experienced fear regarding their future and the risk of COVID-19 infection, alongside feelings of loneliness and disrupted routines—factors contributing to a psychological burden documented in several studies. In this context, alcohol may be used as a form of escapism, consistent with research showing increased alcohol use during stressful or catastrophic events [35, 36].

However, a comparative study of pre-drinking behaviors (consumption prior to social events) among Brazilian and British university students demonstrated that alcohol consumption was associated with missed classes and work obligations [21]. Additionally, students reported experiences of physical violence, sexual harassment, blackouts, coma, or vomiting related to alcohol use [21]. Other studies have linked alcohol consumption to higher risks of physical altercations, homicides, and traffic accidents, making it a leading cause of mortality among young people and a risk factor for subsequent use of other drugs. Thus, alcohol represents a significant hazard for students [37, 38].

Beyond these risks, alcohol consumption is also associated with mental health disorders. Corroborating this, the COVID-19 pandemic itself was a stressful period linked to increased mental health problems. Brazilian students already exhibit high prevalence rates of depression, ranging from 28.6% to 50.0%, and during the pandemic, a large study found that alcohol and other drug use heightened the risk of progressing from moderate to severe depression [39–41]. Factors such as fear of coronavirus infection, social distancing measures, and disruption of social routines with friends and peers were cited as drivers for increased alcohol consumption aimed at alleviating sadness and depressive symptoms [26, 39–42].

Moreover, a positive diagnosis of COVID-19 infection was associated with increased alcohol consumption among students. This association was also observed in a smaller study with 406 students, which reported increased alcohol use among those with confirmed COVID-19 infection [43]. It is important to note that alcohol is an immunosuppressant and may promote susceptibility to respiratory infections, including COVID-19 and other communicable diseases [14, 44, 45]. Additionally, alcohol consumption among young people often occurs in social settings, increasing the risk of COVID-19 transmission via respiratory droplets, regardless of symptom presentation [2].

Despite the high prevalence of alcohol consumption observed, students who reported a decline in their health status did not increase their drinking during the pandemic. This may reflect heightened health concerns among these students, especially considering the healthcare system overload and increased risk of coronavirus exposure during this period [2]. Supporting this notion, a study of first-year students found that non-drinkers exhibited greater resilience in coping with the pandemic and its associated disruptions [46]. Awareness of alcohol's harms may therefore influence consumption behavior during exacerbating conditions such as an infectious disease pandemic.

Study limitations

Our study was conducted at the onset of the COVID-19 pandemic and encompassed three months of data collection. This may represent a limitation regarding students' adaptation to the new living conditions imposed by the pandemic, potentially influencing their alcohol consumption patterns, given that the pandemic lasted approximately three years and many behavioral changes occurred throughout this extended period. Furthermore, during the data collection phase, students were still adjusting to remote learning. Additionally, we did not quantify the volume of alcohol consumed by the students and instead assessed alcohol consumption based on self-reported data.

Moreover, inherent limitations of the cross-sectional study design include the inability to establish causal relationships, the inability to evaluate changes over time, and the potential for bias.

Conclusion

This study contributed to identifying the prevalence of alcohol consumption among college students from Southern Brazil. Given the alarming findings, it is imperative to develop new educational strategies addressing alcohol-related health and social issues, aiming to reduce the number of young individuals who initiate or increase drinking. Furthermore, our findings regarding the increase in alcohol consumption during the early period of the COVID-19 pandemic may help predict behavioral changes during stressful periods and inform preventive measures to mitigate such effects.

Funding Declaration

This study did not receive funding for its execution at any time.

Data Availability

The datasets generated during and/or analyzed during the current study are not available.

Declarations

Ethical approval

As already mentioned in the “Ethical approvals” section, the work was approved by the University's Research Ethics Committee of the Federal University of Rio Grande (CEPAS-FURG), under approval number 34030720.8.0000.5324, issued in 2020.

Consent to Participate

All human rights related to research involving human beings have been respected in this work. The participants were given a Free and Informed Consent Form explaining their rights and the research itself for them to read and make the

decision to take part. Only after giving their consent did the participants have access to the questionnaire.

Consent to publish

All the participants agreed to have their anonymous data published in articles and scientific papers, as stated in the Informed Consent Form.

All the authors listed in this paper also approved its publication.

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6. Conclusão

Os achados deste estudo evidenciam tanto a crescente relevância científica do tema da automedicação entre universitários quanto mudanças significativas nos hábitos de saúde durante a pandemia de COVID-19. Nos primeiros artigos publicados evidenciamos uma associação entre o diagnóstico de COVID-19 e algumas características de vida e saúde dos estudantes universitários – incluindo a prática de automedicação – e também a redução substancial da automedicação no período pandêmico. Além disto, este trabalho evidenciou que, assim como a prática de automedicação, o consumo de álcool entre estudantes universitários também foi impactado pela pandemia de COVID-19, resultando em um aumento do consumo alcoólico nessa população. Esses achados contribuem para a caracterização do perfil dos estudantes universitários da região Sul do Brasil e ressaltam a influência da pandemia sobre comportamentos cotidianos relacionados à saúde. Ademais, o levantamento bibliométrico realizado sobre automedicação em universitários demonstrou um aumento expressivo nas publicações nos últimos anos e uma difusão de pesquisas sobre o tema em diversos países, indicando um maior interesse global na compreensão dos fatores envolvidos com essa prática.

Dessa forma, os resultados aqui apresentados podem subsidiar o desenvolvimento de estratégias educacionais voltadas à conscientização dos estudantes universitários acerca dos riscos associados ao uso inadequado de medicamentos e também ao consumo excessivo de álcool.

7. Perspectivas

Os resultados obtidos neste estudo abrem caminho para diversas investigações complementares e aprofundamentos necessários sobre os comportamentos de saúde entre estudantes universitários. Diante do aumento observado nas práticas de automedicação e no consumo de álcool durante a pandemia de COVID-19, torna-se essencial o desenvolvimento de pesquisas longitudinais que avaliem se essas alterações comportamentais persistem no período pós-pandêmico, identificando potenciais fatores de manutenção ou reversão desses hábitos.

Os achados desta tese podem servir de base para o delineamento e a implementação de programas educativos locais e campanhas de promoção da saúde voltados ao uso racional de medicamentos e à redução do consumo abusivo de álcool no ambiente universitário em locais como as Secretarias de Saúde dos estados do Sul do Brasil.

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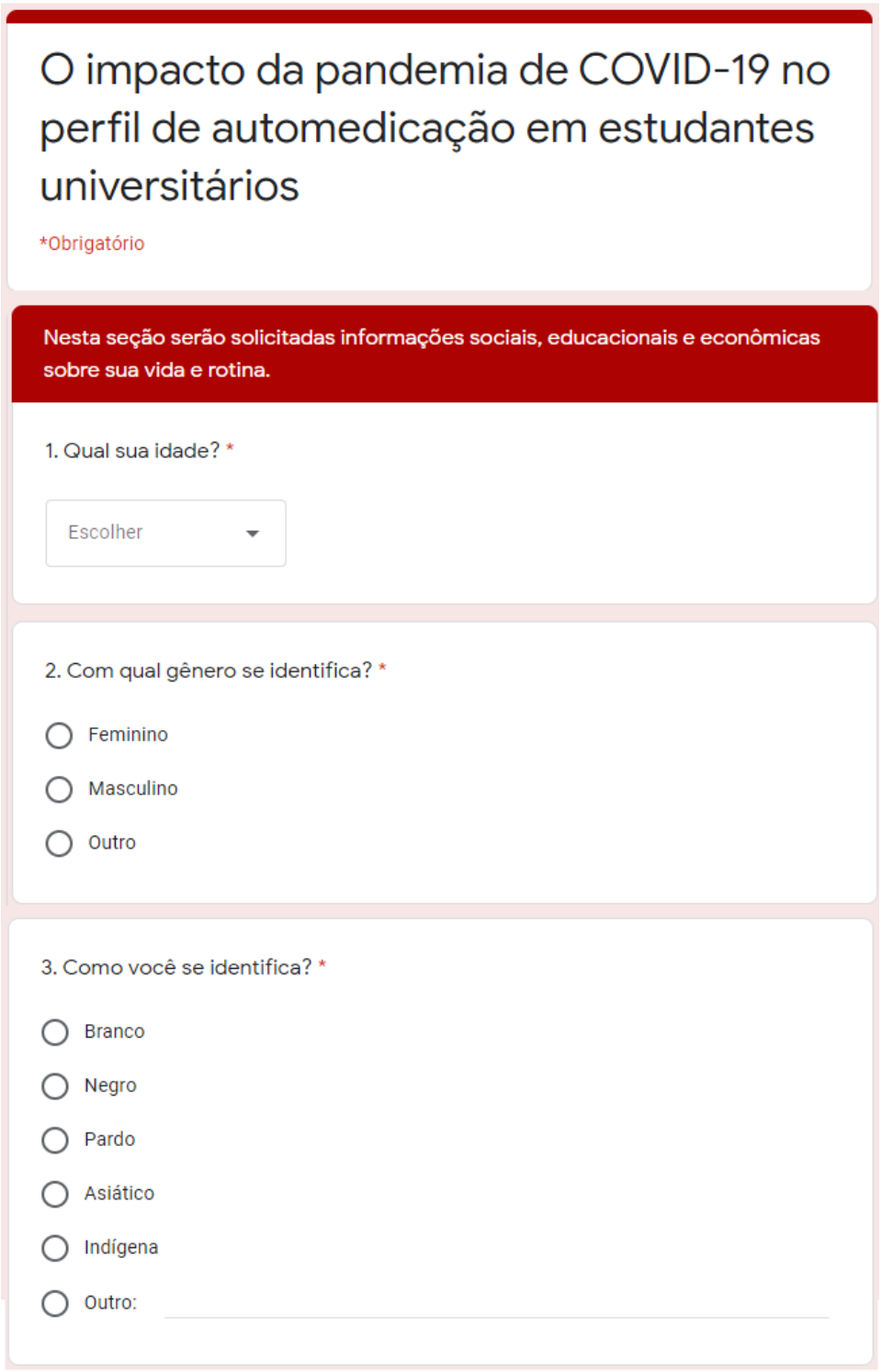
9. Anexos

9.1. Anexo I – Questionário utilizado na pesquisa



O impacto da pandemia de COVID-19 no perfil de automedicação em estudantes universitários

*Obrigatório

Nesta seção serão solicitadas informações sociais, educacionais e econômicas sobre sua vida e rotina.

1. Qual sua idade? *

Escolher

2. Com qual gênero se identifica? *

- Feminino
- Masculino
- Outro

3. Como você se identifica? *

- Branco
- Negro
- Pardo
- Asiático
- Indígena
- Outro:

4. Qual a área do seu curso de graduação? *

- ◯ Saúde, Biológicas e Veterinária (ex.: medicina, enfermagem, farmácia, fisioterapia, terapia ocupacional, fonoaudiologia, biologia, toxicologia, biotecnologia etc.)
- ◯ Educação, Ciências Sociais aplicadas e Humanas (ex.: licenciaturas, letras, psicologia, administração, direito, jornalismo, artes, design, filosofia, turismo etc.)
- ◯ Ciências exatas e Tecnologias (ex.: engenharias, matemática, física, computação, agronomia etc.)
- ◯ Outro: _____

5. Sua universidade é: *

- ◯ Pública
- ◯ Privada

6. Em qual estado você residia antes da pandemia de Covid-19: *

- ◯ Paraná
- ◯ Rio Grande do Sul
- ◯ Santa Catarina

6.1. Em qual cidade você residia antes da pandemia de Covid-19? *

Sua resposta

7. Com quem você residia antes da pandemia de Covid-19? *

- ◯ Sozinho
- ◯ Com pais ou familiares
- ◯ Com companheiro(a)
- ◯ Com companheiro(a) e filhos
- ◯ Só com seus filhos(as)
- ◯ Com colegas

8. Qual sua ocupação? *

- ◯ Trabalho em turno integral
- ◯ Trabalho meio turno
- ◯ Trabalho eventualmente
- ◯ Realizo estágio vinculado a universidade ou instituição educativa
- ◯ Me dedico exclusivamente à graduação

9. Em qual área você trabalha? *

- ◯ Comércio e vendas (roupas, alimentos, bebidas, ferragem, entre outras)
- ◯ Construção civil (pedreiro, encanador, mecânico, auxiliar, entre outras)
- ◯ Área da saúde (farmácias, hospitais, unidades de saúde, laboratórios clínicos, entre outras)
- ◯ Serviços de beleza (manicure, cabeleireiro ou barbeiro, depilação e estética)
- ◯ Educação
- ◯ Indústria
- ◯ Transporte
- ◯ Produção agrícola
- ◯ Outro: _____

Continue respondendo para conhecermos um pouco mais sobre você!

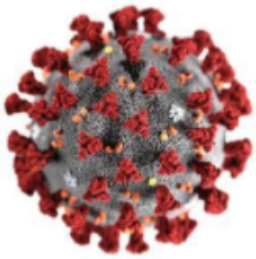
10. Qual a renda média que você ou seu núcleo familiar recebe mensalmente? *

Considere a família que lhe fornece auxílio financeiro

- ◯ Até R$1.045,00
- ◯ De R$1.046,00 a R$2.100,00
- ◯ De R$2.101,00 a R$3.150,00
- ◯ De R$3.151,00 a R$5.250,00
- ◯ De R$5.251,00 a R$10.450,00
- ◯ De R$10.451,00 a R$19.999,99
- ◯ Acima de R$20.000,00

Nesta seção serão solicitadas informações sobre sua saúde e seus hábitos.

Para responder a estas perguntas
pense em sua vida e rotina
ANTES da pandemia de Covid-19



11. Você sofre de alguma doença crônica (ex.: hipertensão, diabetes, depressão, ansiedade, obesidade, entre outras)? *

- ◯ Sim
- ◯ Não

12. Qual(is) doença(s)? *

Sua resposta

13. Toma algum medicamento para essa doença? *

- ◯ Sim
- ◯ Não

14. Indique o(s) nome(s) do medicamento(s) *

Sua resposta

15. Estes medicamentos foram prescritos por um médico ou dentista? *

- ◯ Sim
- ◯ Não

16. Como você considerava sua condição de saúde em geral antes da pandemia de Covid-19 (Coronavírus)? *

- ◯ Excelente
- ◯ Boa
- ◯ Regular
- ◯ Ruim
- ◯ Péssima

17. Com que frequência você costumava utilizar medicamentos sem prescrição antes da pandemia de Covid-19 quando estava com alguma das condições abaixo? (considere 1 como NUNCA utilizava e 5 como SEMPRE utilizava) *

Considere PRESCRIÇÃO como "a definição do medicamento que será consumido pelo paciente mediante a elaboração de uma receita física ou digital emitida pelo médico ou dentista" (ANVISA, 1998; ANVISA, 2020).

	1	2	3	4	5
Dor de cabeça	○	○	○	○	○
Dor de dente	○	○	○	○	○
Dores musculares/Dor na coluna	○	○	○	○	○
Febre	○	○	○	○	○
Gripe/Resfriado	○	○	○	○	○
Dor de garganta	○	○	○	○	○
Tosse	○	○	○	○	○
Alergias	○	○	○	○	○
Vômitos	○	○	○	○	○
Diarreia	○	○	○	○	○
Enjoos	○	○	○	○	○
Má digestão	○	○	○	○	○
Azia	○	○	○	○	○
Cólicas menstruais	○	○	○	○	○
Pílula do dia seguinte	○	○	○	○	○
Anticoncepcionais	○	○	○	○	○
Dificuldade para dormir	○	○	○	○	○
Dificuldade em se concentrar	○	○	○	○	○
Cansaço físico/mental	○	○	○	○	○
Ansiedade/Nervosismo	○	○	○	○	○

18. Quando você decidia utilizar um medicamento sem prescrição de médico ou dentista, você consultava (selecione uma ou mais alternativas): *

- [ ] Farmacêutico
- [ ] Outro profissional de saúde (enfermeiro, fisioterapeuta, nutricionista, psicólogo, outro)
- [ ] Balconista da farmácia (não o farmacêutico)
- [ ] Internet
- [ ] Livros
- [ ] Aulas e conhecimentos da faculdade
- [ ] Familiares, amigos, vizinhos, etc
- [ ] Uma prescrição antiga
- [ ] Ninguém, é uma decisão própria
- [ ] Outro: _____

19. Você acredita que o uso de medicamentos pode trazer malefícios a saúde? *

Considere MEDICAMENTOS como "produtos farmacêuticos com finalidade profilática, curativa, paliativa ou diagnóstica" (ANVISA, 1973).

- ◯ Sim, mas utilizo da mesma forma
- ◯ Sim e por isso só utilizo quando o médico ou outro profissional prescreve para mim
- ◯ Sim e por isso não utilizo medicamentos
- ◯ Não

20. Você utiliza dois ou mais medicamentos ao mesmo tempo? *

- ◯ Sim
- ◯ Não

21. Você conhece as interações entre os medicamentos que utiliza e outros medicamentos, alimentos ou substâncias? *

- ◯ Sim, mas utilizo da mesma forma
- ◯ Sim e só utilizo caso não hajam interações ou estas não atrapalhem no tratamento
- ◯ Sim e por isso não utilizo mais de um medicamento ao mesmo tempo
- ◯ Não

22. Você lê as bulas dos medicamentos que utiliza? *

- ◯ Sempre
- ◯ Às vezes
- ◯ Nunca

23. Por que você se automedica? (selecione uma ou mais alternativas) *

Considere AUTOMEDICAÇÃO o uso de medicamento sem a prescrição, orientação ou acompanhamento de um médico ou dentista.

- ☐ Acha que o problema é simples e vai resolver facilmente
- ☐ Já teve o problema antes e sabe o que utilizar
- ☐ Não tem condição financeira de ir a um médico ou outro profissional de saúde
- ☐ Não tem tempo de ir a um médico ou outro profissional
- ☐ Demora nos tempos de espera para atendimento
- ☐ Tem medo de ir ao médico ou outro profissional de saúde
- ☐ Não me automedico, sempre consulto um médico ou dentista para prescrever medicamentos para mim
- ☐ Outro: _____

24. Você aconselha para outras pessoas que utilizem algum medicamento que você já tomou? *

- ◯ Sempre
- ◯ Às vezes
- ◯ Nunca

25. Você estava tomando algum produto natural (ex.: chás medicinais, extratos vegetais, preparados ou xaropes caseiros, entre outros) antes da pandemia? *

- ◯ Sim
- ◯ Não

26. Qual(is) produto(s) natural(is) (chás medicinais, extratos vegetais, preparados ou xaropes caseiros, entre outros)?

Sua resposta

27. Você acredita que o uso de produto natural (ex.: chás medicinais, extratos vegetais, preparados ou xaropes caseiros, entre outros) pode trazer malefícios a saúde? *

- ◯ Sim, mas utilizo da mesma forma
- ◯ Sim e por isso só utilizo quando o médico ou outro profissional prescreve para mim
- ◯ Sim e por isso não utilizo
- ◯ Não

28. Você fazia uso de alguma das seguintes substâncias antes da pandemia de Covid-19? (selecione uma ou mais alternativas) *

Selecione uma ou mais alternativas de acordo com seu caso.

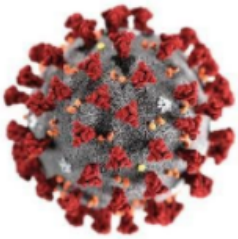
- ☐ Álcool
- ☐ Cigarro
- ☐ Maconha
- ☐ Cocaína
- ☐ Anfetamina
- ☐ Ecstasy
- ☐ LSD
- ☐ Heroína
- ☐ Crack
- ☐ Solventes (ex. Thinner)
- ☐ Não utilizo nenhuma substância
- ☐ Outro:

29. Se selecionou alguma das alternativas anteriores, por favor indique a frequência (vezes por dia, semana ou mês) com que as consome:

Sua resposta

Nesta última seção serão solicitadas informações sobre sua saúde, hábitos e comportamento.

Para responder a estas perguntas pense em sua vida e rotina **DURANTE** a pandemia de Covid-19



30. Durante a pandemia de Covid-19, você: *

- ◯ Não está realizando nenhuma medida de isolamento social (age normalmente como antes da pandemia, visita familiares, amigos ou colegas etc.)
- ◯ Sai para trabalhar, mas evita aglomerações e visitas a familiares e amigos.
- ◯ Está realizando isolamento social e só sai de casa para atividades essenciais (comprar mantimentos ou medicamentos, consulta médica etc.)
- ◯ Está realizando isolamento social e não sai de casa (realiza atividades do trabalho e/ou faculdade de maneira on-line, realiza compras e/ou consultas on-line etc).

31. Você mudou de estado ou cidade durante a pandemia de Covid-19? *

- ◯ Sim
- ◯ Não

32. Com quem você está morando durante a pandemia de Covid-19? *

- ◯ Sozinho
- ◯ Com pais ou familiares
- ◯ Com companheiro (a)
- ◯ Com companheiro (a) e filho (os)
- ◯ Só com seus filhos
- ◯ Com colegas
- ◯ Outro: _____

33. Você está tendo aulas à distância/remotas na Universidade durante a pandemia de Covid-19? *

- ◯ Sim
- ◯ Não
- ◯ Meu curso já era EAD.

34. Notou piora da sua condição de saúde durante a pandemia de Covid-19? *

- ◯ Sim
- ◯ Não

35. Notou aumento ou início de algum dos sintomas abaixo durante a pandemia de Covid-19? (selecione uma ou mais alternativas) *

- ☐ Problemas associados ao sono
- ☐ Dificuldade em se concentrar
- ☐ Cansaço físico/mental
- ☐ Ansiedade/Nervosismo
- ☐ Crises de pânico
- ☐ Preocupação
- ☐ Agitação
- ☐ Dores de cabeça
- ☐ Dores musculares
- ☐ Problemas gastrointestinais (dor de estômago, náuseas, diarréia, entre outros)
- ☐ Não percebi nenhum sintoma
- ☐ Outro: _____

36. Durante a pandemia de Covid-19 você utilizou algum medicamento sem a prescrição de um médico ou dentista? *

- ◯ Sim
- ◯ Não

37. Se você utilizou medicamento sem prescrição, por qual motivo foi? (selecione uma ou mais alternativas) *

- [ ] Já teve sintomas semelhantes antes e sabe qual medicamento utilizar.
- [ ] Não teve condição financeira de procurar atendimento.
- [ ] Os sintomas eram leves e fáceis de serem resolvidos.
- [ ] Está acostumado a se automedicar.
- [ ] Tem medo de buscar atendimento médico/odontológico devido à pandemia.
- [ ] Nas Unidades de Saúde estão atendendo apenas emergências ou sintomas de Covid-19.
- [ ] Outro: _____

38. Consultou alguma fonte de informação antes de se automedicar? (selecione uma ou mais alternativas) *

- [ ] Farmacêutico
- [ ] Outro profissional da saúde (enfermeiro, fisioterapeuta, nutricionista, psicólogo, outro)
- [ ] Balconista da farmácia (não o farmacêutico)
- [ ] Internet
- [ ] Livros
- [ ] Aulas e conhecimentos da faculdade
- [ ] Familiares, amigos, vizinhos, etc
- [ ] Uma prescrição antiga ou para outro problema
- [ ] Ninguém, foi uma decisão própria
- [ ] Outro: _____

39. Para qual sintoma ou doença se automedicou? (selecione uma ou mais alternativas) *

- [ ] Dor de cabeça
- [ ] Dor de dente
- [ ] Dores musculares/Dor na coluna
- [ ] Febre
- [ ] Gripe/Resfriado
- [ ] Dor de garganta
- [ ] Tosse
- [ ] Alergias
- [ ] Vômitos
- [ ] Diarreia
- [ ] Enjôos
- [ ] Má digestão
- [ ] Azia
- [ ] Cólicas menstruais
- [ ] Uso de pílula do dia seguinte
- [ ] Uso de anticoncepcional
- [ ] Dificuldade para dormir
- [ ] Dificuldade para se concentrar
- [ ] Cansaço físico/mental
- [ ] Ansiedade/Nervosismo
- [ ] Outro: _____

40. Você começou a usar ou aumentou a frequência de consumo de alguma das seguintes substâncias durante a pandemia de Covid-19? (selecione uma ou mais alternativas) *

- [ ] Álcool
- [ ] Cigarro
- [ ] Maconha
- [ ] Cocaína
- [ ] Anfetamina
- [ ] Ectasy
- [ ] LSD
- [ ] Heroína
- [ ] Crack
- [ ] Solventes (ex.: Thinner)
- [ ] Não iniciei ou aumentei o uso de nenhuma substância
- [ ] Outro: _____

41. Caso você estivesse com sintomas de Covid-19, utilizaria algum medicamento sem prescrição? *

- ◯ Sim
- ◯ Não

42. Você teve diagnóstico confirmado de Covid-19? *

- ◯ Sim
- ◯ Não

43. Se sua resposta foi sim, quais foram os cuidados indicados pelo médico? *

- ◯ Isolamento domiciliar e medicamentos
- ◯ Somente isolamento domiciliar
- ◯ Internação hospitalar
- ◯ Outro: _____

44. Você já utilizou algum medicamento para se prevenir contra a infecção por coronavírus? *

- ◯ Sim
- ◯ Não

45. Qual medicamento você utilizou para se prevenir contra a infecção por coronavírus? *

Sua resposta

46. O que o motivou a utilizar medicamento para se prevenir contra a infecção por coronavírus? *

- ◯ Recomendação de um médico/dentista
- ◯ Recomendação do farmacêutico
- ◯ Recomendação de outro profissional da saúde (enfermeiro, fisioterapeuta, nutricionista, psicólogo, outro)
- ◯ Indicação do balconista da farmácia (não o farmacêutico)
- ◯ Indicação de familiares, amigos vizinhos, etc
- ◯ Notícias que li na internet
- ◯ Notícias que vi na TV
- ◯ Outro: _____

47. Você conhecia os efeitos adversos que o medicamento utilizado para se prevenir contra a infecção por coronavírus poderia lhe causar? *

- ◯ Sim
- ◯ Não

48. Você teve algum efeito adverso com o uso deste medicamento? *

- ◯ Sim
- ◯ Não

- ◯ Não

49. Você já utilizou algum produto natural (ex.: chás medicinais, extratos vegetais, preparados ou xaropes caseiros, entre outros) para prevenir a infecção por coronavírus? *

- ◯ Sim
- ◯ Não

50. O que o motivou a utilizar este produto natural para se prevenir contra a infecção por coronavírus? *

- ◯ Recomendação de um médico/dentista
- ◯ Recomendação do farmacêutico
- ◯ Recomendação de outro profissional da saúde (enfermeiro, fisioterapeuta, nutricionista, psicólogo, outro)
- ◯ Indicação do balconista da farmácia (não o farmacêutico)
- ◯ Indicação de familiares, amigos vizinhos, etc
- ◯ Notícias que li na internet
- ◯ Notícias que vi na TV
- ◯ Outro: _____

51. Você conhecia os efeitos adversos que o produto natural utilizado para se prevenir contra a infecção por coronavírus poderia lhe causar? *

- ◯ Sim
- ◯ Não

52. Você teve algum efeito adverso com o uso deste produto natural? *

- ◯ Sim
- ◯ Não

53. Você acredita que o uso de medicamentos não comprovados contra Covid-19 apresenta: *

- ◯ Somente benefícios à minha saúde
- ◯ Benefício contra o quadro de Covid-19 mas, ao mesmo tempo, efeitos prejudiciais à minha saúde
- ◯ Somente efeitos prejudiciais tanto à minha saúde em geral quanto ao quadro de Covid-19
- ◯ Nenhum efeito, seja ele bom ou ruim.

Agradecemos a participação! Caso você tenha algum comentário, dúvida ou sugestão em relação aos assuntos abordados neste questionário, por favor, nos indique aqui.

Sua resposta

9.2. Anexo II – Parecer Consubstanciado do Comitê de Ética em Pesquisa

UNIVERSIDADE FEDERAL DO RIO GRANDE - FURG

Plataforma Brasil

PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: O impacto da pandemia de COVID-19 no perfil de automedicação em estudantes universitários

Pesquisador: Mariana Appel Hort

Área Temática:

Versão: 2

CAAE: 34030720.8.0000.5324

Instituição Proponente: Instituto de Ciências Biológicas- ICB

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 4.127.866

Apresentação do Projeto:

A COVID-19 é uma doença causada por um novo coronavírus e se caracteriza por sintomas respiratórios que resultam em uma severa síndrome respiratória aguda. A pandemia de COVID-19, declarada em março de 2020 pela Organização Mundial da Saúde, está provocando significativas alterações no comportamento humano, tais como o distanciamento social, o trabalho e estudo em casa, o uso de máscaras faciais, a higienização frequente das mãos, entre outros. Ainda, a situação de pandemia pode dificultar os cuidados à saúde, seja por dificuldades de acesso aos serviços ou ainda por medo do contágio. Todos esses fatores associados ao excesso de informação na mídia sobre a COVID-19 podem acarretar mudanças comportamentais, por exemplo em relação ao uso de medicamentos, podendo levar à prática da automedicação. Vale ressaltar que a automedicação, praticada globalmente, é um importante problema de saúde pública. O uso inapropriado de medicamentos por resultar em reações adversas, mascaramento de doenças e imprecisão do diagnóstico, aumento da morbidade, interações medicamentosas, resistência a antibióticos e desperdício de recursos de saúde. Alguns estudos têm mostrado que há uma alta prevalência da prática da automedicação entre estudantes universitários no mundo. Esta população vem sendo afetada diretamente pelas medidas adotadas para contenção e mitigação da pandemia, tais como a suspensão das atividades presenciais e a adoção de modalidades de ensino remoto. Neste contexto, este estudo pretende identificar a prevalência e os fatores associados à prática de automedicação entre os estudantes de graduação

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matriculados nas universidades da região Sul do Brasil e como esta prática foi afetada pela pandemia de COVID-19.

Objetivo da Pesquisa:

Objetivo Primário:

Identificar a prevalência e fatores associados à automedicação entre os estudantes de graduação de instituições de ensino superior da região Sul do Brasil e como essa prática foi afetada pela pandemia de COVID-19.

Objetivo Secundário:

Descrever/Caracterizar o perfil dos acadêmicos que praticam a automedicação; Identificar os medicamentos mais utilizados, as indicações terapêuticas e as razões para a automedicação entre os acadêmicos; Verificar a influência da formação acadêmica sobre a prática da automedicação; Verificar se a pandemia da COVID-19 afetou a prática da automedicação entre os acadêmicos; Avaliar o uso de medicamentos para a COVID-19 entre os acadêmicos; Realizar correlações de variáveis de interesse

Avaliação dos Riscos e Benefícios:

Riscos:

O instrumento utilizado para coleta dos dados pode ser considerado de baixo risco. Será garantido o esclarecimento de eventuais dúvidas através de contato por e-mail dos pesquisadores responsáveis e, também, será garantida a liberdade para a retirada do termo de consentimento livre e esclarecido (desistência), sem qualquer prejuízo, a qualquer momento.Além disso, será garantida assistência integral e gratuita ao participante. Não
haverá despesas ou compensações pessoais quanto a participação na pesquisa.

Benefícios:

Os dados coletados serão utilizados apenas para a pesquisa e os resultados serão veiculados através de artigos científicos e/ou apresentações em congressos, com absoluto sigilo da identificação dos participantes. Seus resultados poderão subsidiar o planejamento e a implementação de ações político-sociais voltadas à saúde dos acadêmicos

Comentários e Considerações sobre a Pesquisa:

Pesquisa relevante para a área em estudo

Considerações sobre os Termos de apresentação obrigatória:

Apresentados

Conclusões ou Pendências e Lista de Inadequações:

Sem pendências

Considerações Finais a critério do CEP:

Prezada Pesquisadora, seu projeto foi APROVADO! Solicitamos que encaminhe o relatório final até o dia 15/03/2021. O modelo está disponível no site: https://propesp.furg.br/pt/comites/cep-furg

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1581213.pdf	30/06/2020 10:27:42		Aceito
Outros	InstituicoesdeEnsinoSuperior.pdf	30/06/2020 10:26:30	Mariana Appel Hort	Aceito
Outros	EmailparaInstituicoes.pdf	30/06/2020 10:25:47	Mariana Appel Hort	Aceito
Outros	Cartaresposta.pdf	30/06/2020 10:25:09	Mariana Appel Hort	Aceito
Projeto Detalhado / Brochura Investigador	Textoprojetofinalcorrigido.pdf	30/06/2020 10:24:51	Mariana Appel Hort	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TLCEeQuestionariocorrigido.pdf	30/06/2020 10:24:21	Mariana Appel Hort	Aceito
Folha de Rosto	folhaderostoassinada.pdf	22/06/2020 18:18:26	Mariana Appel Hort	Aceito
Outros	Pesq1397AdReferendum.pdf	21/06/2020 20:52:36	Mariana Appel Hort	Aceito

Situação do Parecer:
Aprovado

Necessita Apreciação da CONEP:
Não

RIO GRANDE, 01 de Julho de 2020

Assinado por:
Camila Daiane Silva
(Coordenador(a))

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