CENTRO UNIVERSITÁRIO CHRISTUS
MESTRADO PROFISSIONAL EM ENSINO NA SAÚDE

MATEUS SUDARIO ALENCAR

ESCOPOFOBIA NO CONTEXTO DO ENSINO REMOTO: FATORES ASSOCIADOS COM RISCO AUMENTADO

FORTALEZA
2022

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Dissertação apresentada ao Centro Universitário Christus para obtenção de qualificação de Mestrado em Ensino na Saúde e Tecnologias Educacionais. Área de concentração: Ensino remoto. Linha de pesquisa: Uso de câmeras.

Orientador(a): Prof. Dr. Hermano Alexandre Lima Rocha

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Dedico este trabalho à minha esposa Janine Soares, meus pais Victor Hugo e Maria José e minha irmã Victoria.

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RESUMO

A escopofobia pode ser descrita na área médica como o medo de ser observado ou encarado. Apesar da relevância da escopofobia em cenários de aprendizado remoto, que sempre existiram e foram amplamente expandidos durante a pandemia na educação médica, estudos sobre esse tema são extremamente raros em todo o mundo. Assim, para preencher essa lacuna, foi desenvolvido um estudo transversal com estudantes de medicina para avaliar a associação da escopofobia com a prevalência de fadiga de aprendizagem online. Métodos Estudo transversal, quantitativo, analítico, realizado em Faculdades de Medicina do Brasil. Para avaliar o risco de escopofobia, foram elaboradas questões baseadas na literatura sobre o tema. Foi utilizada a Zoom Exhaustion & Fatigue Scale (ZEF) e as questões estão validadas para o português brasileiro. Modelos de regressão logística também foram usados para avaliar a relação do risco de escopofobia e escores ZEF. Resultados Participaram do estudo 283 estudantes do Brasil. A idade mediana foi de 23 anos e 64% dos participantes eram do sexo feminino. No total, 14,5% foram considerados de alto risco para escopofobia. Verificou-se que após ajuste para sexo, renda e número de moradores no domicílio, a escopofobia e o escore total de fadiga do zoom permaneceram associados. Para o escore total, cada ponto adicional na escala aumentou a chance de escopofobia em 3%, e para o domínio geral, 19% (valores de $p < 0,05$). Em conclusão, este estudo mostra uma prevalência relevante de alunos com escopofobia, o que exige uma abordagem diferenciada por parte dos professores. As causas da escopofobia são muitas vezes específicas e têm uma origem psicológica que vai além da gestão pedagógica usual. Portanto, são necessárias estratégias de motivação de forma geral, bem como individualizada, visando favorecer a melhoria do processo de ensino e aprendizagem online.

Palavras-chave: Educação Médica; Fadiga; COVID-19; Educação, Medicina.

ABSTRACT

Scopophobia can be described in the medical field as the fear of being watched or stared at. Despite the relevance of scopophobia in remote learning scenarios, which have always existed and been widely expanded during the pandemic in medical education, studies on this topic are extremely rare worldwide. Thus, to fill this gap, a cross-sectional study with medical students was developed to assess the association of scopophobia with the prevalence of online learning fatigue. Methods A cross-sectional, quantitative, analytical study carried out at Faculties of Medicine in Brazil. To assess the risk of scopophobia, questions were developed based on the literature on the subject. The Zoom Exhaustion & Fatigue Scale (ZEF) was used and the questions are validated for Brazilian Portuguese. Logistic regression models were also used to assess the relationship between scopophobia risk and ZEF scores. Results A total of 283 students from Brazil participated in the study. The median age was 23 years and 64% of participants were female. In total, 14.5% were considered to be at high risk for scopophobia. It was found that after adjusting for sex, income and number of residents in the household, scopophobia and the total zoom fatigue score remained associated. For the total score, each additional point on the scale increased the chance of scopophobia by 3%, and for the general domain, 19% (p-values < 0.05). In conclusion, this study shows a relevant prevalence of students with scopophobia, which requires a differentiated approach on the part of teachers. The causes of scopophobia are often specific and have a psychological origin that goes beyond the usual pedagogical management. Therefore, motivation strategies are needed in general, as well as individualized, in order to favor the improvement of the teaching and learning process online.

Keywords: Medical Education; Fatigue; COVID-19; Education, Medicine.

LISTA DE ABREVIATURAS E SIGLAS

TCLE	Termo de Consentimento Livre e Esclarecido
TIC	Tecnologias de Informação e Comunicação
LIT	Laboratório de Inovações Tecnológicas
MESTED	Mestrado em Ensino na Saúde e Tecnologias Educacionais
Unichristus	Centro Universitário Christus
TAS	Transtorno de Ansiedade Social

SUMÁRIO

1 INTRODUÇÃO

O termo coronavírus se refere a uma família de vírus de RNA que apresenta sete variantes que podem infectar seres humanos, porém o mais alarmante foi o SARS-CoV-2 (*Severe Acute Respiratory Syndrome Coronavirus* 2), vírus responsável pela COVID-19 (Coronavírus Disease 2019), doença zoonótica que teve seus primeiros casos identificados em dezembro de 2019 em Wuhan, província chinesa de Hubei, e que logo se espalhou pelo resto do mundo, sendo caracterizado como pandemia pela Organização Mundial da Saúde (OMS) em março de 2020 (ISER; SLIVA; RAYMUNDO; POLETO et al., 2020; ZHAI; DINGA; WUB; LONGC et al., 2020).

Devido a sua elevada transmissibilidade, fazem-se necessárias medidas de contenção da disseminação do vírus e prevenção. Dentre essas, encontra-se o isolamento, a quarentena, o distanciamento social e a contenção da comunidade (WILDER-SMITH; FREEDMAN, 2020). Desse modo, muitas instituições de ensino foram impedidas de ter suas aulas presenciais continuadas, havendo a necessidade de adotar metodologias de ensino à distância para minimizar os impactos da pandemia no processo de aprendizagem (DE OLIVEIRA; DE OLIVEIRA, 2021; VERCELLI, 2020).

Nesse contexto, há necessidade de uma ampla utilização de tecnologias da informação e comunicação para o ensino, a exemplo de meios de comunicação síncronos, como chats e webconferências, e assíncronos com a disponibilização de conteúdos virtuais com fóruns, repositórios, salas de aulas virtuais e videoaulas. Dentre essas várias ferramentas, os professores devem selecionar as mais adequadas e utilizá-las corretamente para melhor desenvolver o interesse, a interação e o aprendizado do aluno (ARRUDA; SIQUEIRA, 2021).

Durante a atual pandemia, diversos estressores, como prognósticos incertos e dificuldades financeiras, poderão contribuir para o desequilíbrio emocional e a maior propensão a doenças psiquiátricas na população (PFEFFERBAUM; NORTH, 2020). No Reino Unido, um estudo realizado por Pierce et al. (2020) comparou as mudanças na saúde mental da população antes e depois da pandemia de COVID-19 e encontrou um aumento maior do que o esperado no sofrimento mental, sendo mais evidente em jovens, mulheres e pessoas que viviam com crianças (PIERCE; HOPE; FORD; HATCH et al., 2020).

No contexto da saúde mental estudantil, houve uma elevação no nível de ansiedade, depressão e sedentarismo dos discentes (HUCKINS; DASILVA; WANG; HEDLUND et al., 2020). Algumas medidas educativas implementadas na metodologia online podem agravar esse quadro, como a obrigatoriedade de ligar a câmera durante a aula (CASTELLI; SARVAY, 2021).

Para diversos profissionais, dentre eles, estudantes de medicina, o desenvolvimento das habilidades sociais, não somente para que as atividades acadêmicas sejam desenvolvidas, mas também para enfrentar a rotina exigida pela sua futura profissão, fundamentada a relação médico-paciente, assim como também na comunicação interpessoal (AMARAL; ILHA, 2022).

Com as medidas preventivas, algumas pessoas vêm sendo diagnosticadas com o Transtorno de Ansiedade Social (TAS), também chamado de acordo com o DSM-IV-TR (APA, 2002) de Fobia Social, resultando em prejuízo no comprometimento psicossocial e funcional (CRIPPA, 2009). Com o lingo período de isolamento provocado pela pandemia que foi decretado em março de 2020, quanto mais o indivíduo fica isolado, mais suas habilidades sociais e confiança vão diminuindo, dificultando a convivência social e elevando o nível de ansiedade (AMARAL; ILHA, 2022).

Em uma pessoa, o diagnóstico de um transtorno mental provoca diversos prejuízos e gera um agravo quando este transtorno provoca danos negativos no relacionamento interpessoal. Normalmente, é possível perceber que os transtornos mentais apresentam também comorbidades. O que pode resultar em dificuldades maiores em relação a vida do sujeito, destacando, dentre eles, o Transtorno Depressivo e a Fobia Social (INGRAM; RAMEL; CHAVIRA; SCHER, 2005).

O TAS tem como principal característica um medo persistente, em que o próprio sujeito o considera como excessivo, identificado em uma ou mais ocasiões sociais, apresentando durante uma crítica ou mesmo a uma avaliação negativa por parte de alguma pessoa, ou mesmo da família, uma hipersensibilidade (AMARAL; ILHA, 2022).

De acordo com o DSM-IV-TR (APA, 2002), a fobia social pode ser classificada em dois subtipos: um deles é o generalizado, em que na maioria das situações sociais e de desempenho existe a prevalência do medo; já a segunda está relacionada a algo específico ou não generalizado, em que o medo se caracteriza por uma única situação pública de desempenho ou de um número pequeno de situações de interação social. De acordo com os estudos já realizados, o déficit nas habilidades sociais ou mesmo

do sujeito apresentar grave prejuízo tanto social como ocupacional, estão mais propensos quando o paciente é diagnosticado com o subtipo generalizado (MULULO; MENEZES; FONTELLE; VERSIANI, 2008).

Sobre esse transtorno é importante mencionar que, tipicamente a TAS inicia-se na infância ou na adolescência, podendo ser leve, grave ou moderado. No entanto, apenas 4% a 5,6% dos pacientes são diagnosticados corretamente (KESSLER; DEMLER; FRANK; OLFSON, et al. 2005). Para saber se uma pessoa tem ou não a fobia social, realiza-se uma análise clínica que durante a avaliação distingue a timidez pelo prejuízo, persistência e sofrimento oriundos dos sintomas relacionados a ansiedade. A criticidade da fobia social acentua o prejuízo funcional e ocupacional do paciente (MULULO; MENEZES; FONTELLE; VERSIANI, 2008).

Segundo as evidências, faz-se necessário uma atenção maior sobre o diagnóstico e tratamento da fobia social, haja vista que ainda é pequena a frequência do seu diagnóstico, que pode estar relacionado a outras psicopatologias, podendo citar transtorno de humor, transtorno de ansiedade, assim como também transtornos alimentares (DILBAZ; ENEZ; ÇAVUŞ, 2011).

Para melhor compreensão da fobia social, a falta de habilidade e a ansiedade social no passado eram interpretadas como sendo o mesmo problema, pois no caso do falar em público, essa ação, por exemplo, requer que o sujeito ao mesmo tempo tenha habilidade social e ao mesmo tempo tenha controle sobre a ansiedade social. No caso apresentado, ao ser identificado o déficit em uma dessas áreas a outra acaba sendo igualmente prejudicada (McNEIL, 2010).

Esse excessivo medo gera grandes prejuízos, principalmente em relação a qualidade de vida e também no que se refere ao comprometimento expressivo das suas relações não somente no âmbito social, mas também no que se refere as relações laborais e acadêmicas. Com essa insegurança provocada melo medo, pela fobia social, o sujeito acaba se isolando socialmente e que pode provocar inclusive a desistência da sua vida acadêmica ou do desenvolvimento da sua carreira, isso porque, o gerenciamento, assim como a construção dos seus saberes podem provocar um forte sentimento de incapacidade e limitação frente a grande responsabilidade (AMARAL; ILHA, 2022). A fobia social gera no sujeito crenças negativas a respeito das situações sociais, que pode desencadear, diante dessa vulnerabilidade, outros transtornos, como depressão, não somente pelo isolamento

social, mas também pelo nível geral de distorções cognitivas (SAILER; HAZLET-STEVEN, 2009).

Para avaliar o nível de ansiedade e depressão, destaca-se *Hospital Anxiety and Depression Scale* (HAD), que é composto 14 questões de múltipla escolha, sendo sete relacionados a ansiedade (HADS-A) e as outras sete a depressão (HADS-D). A proposta inicial era fazer ama avaliação de sintomas de ansiedade e depressão em paciente internado por condições diversas (MARCOLINO et al., 2007).

No caso em estudo, destaca-se também a escopofobia, que significa temor de ser observado e está inclusa nos distúrbios de antropofobia (ARUGA, 2020; OGAWA; BOUDERLIQUE, 1994). A escopofobia está presente no meio acadêmico, visto que com a pandemia pelo COVID-19 e o consequente isolamento social, foi necessária a introdução do ensino remoto, exigindo que as câmeras fossem ligadas pelos alunos e professores em certos momentos (PRADO; TAVARES; ARANTES, 2016; VERCELLI, 2020).

No entanto, existem diversos motivos para muitos alunos não optarem por ligar a câmera, a exemplo de não conseguirem olhar para o seu próprio rosto por muito tempo, como se estivesse em frente a um espelho, fato que acontece, principalmente, com indivíduos que sofreram algum trauma ou que possuem algum distúrbio mental (CASTELLI; SARVAY, 2021; COSTA, 2020). Além disso, foi relatado que alguns discentes se sentem incomodados em expor seu ambiente do lar aos colegas e aos professores, por acharem que serão julgados por ter uma casa mais humilde ou por mostrar práticas culturais diferentes (COSTA, 2020).

Desse modo, diversos efeitos positivos proporcionados pela ativação da câmera são perdidos, como a possibilidade da linguagem não-verbal entre professores e alunos no decorrer das aulas, que serviria de auxílio para o professor na avaliação da eficácia e satisfação do ensino (MOTTET, 2000). Portanto, torna-se importante a elaboração de soluções para reverter esse cenário, como a não obrigatoriedade e sim o encorajamento dos alunos a ligarem as câmeras (CASTELLI; SARVAY, 2021).

2 OBJETIVOS

2.1 OBJETIVO GERAL

Determinar a prevalência de risco aumentado de Escopofobia no Contexto do Ensino Remoto em estudantes do curso de Medicina do Centro Universitário Unichristus e outras instituições de ensino médico pelo Brasil durante a vigência da pandemia de COVID19 e identificar fatores associados com maior risco.

2.2 OBJETIVOS ESPECÍFICOS

- Explorar a prevalência do risco aumentado de Escopofobia no Contexto do Ensino Remoto;
- Identificar os fatores associados com risco aumentado Escopofobia no Contexto do Ensino Remoto.

3 MATERIAIS E MÉTODOS

3.1 NATUREZA DO ESTUDO

Será realizado um estudo transversal, quantitativo, analítico, para os desfechos analisados.

3.2 DELIMITAÇÃO DO ESTUDO

Estudo Transversal quantitativo com abordagem analítica da prevalência de escopofobia e fatores associados, bem como seu impacto na experiência de vivência acadêmica.

3.3 LOCAL E PERÍODO DO ESTUDO

O estudo será realizado em instituições de ensino superior nos cursos de Medicina pelo Brasil, através de questionário online, no qual os participantes responderão após análise de TCLE. O período do estudo será de setembro de 2021 a junho de 2022.

3.4 POPULAÇÃO E AMOSTRA DO ESTUDO

Serão incluídos todos os discentes com idade superior a 18 anos, de ambos os sexos, que estejam vinculados às instituições de ensino superior dos cursos de Medicina. Serão excluídos os discentes com idade inferior a 18 anos e aqueles que não desejem participar do estudo, que não consigam responder às perguntas do instrumento de coleta, que não estejam vinculados a alguma instituição de ensino superior do curso de Medicina ou que não fizeram uso de plataformas virtuais durante a pandemia.

O cálculo amostral com grau de confiança de 95% levou em consideração o número de estudantes com poder de 80%. Foi utilizada a fórmula $n=N Z^2 p (1-p)(N-1) e^2 + Z^2 p (1-p)$ onde: n = o tamanho da amostra que queremos calcular; N = tamanho do universo; Z = o desvio do valor médio que é aceito para alcançar o nível de confiança desejado; e = a margem de erro máximo que é admitida e p = a proporção

que se espera encontrar. Com estes parâmetros, calculou-se um n mínimo de 384 para prevalências tão baixas quanto 20%.

3.5 COLETA DE DADOS

As perguntas foram inseridas através do Formulários Google® e enviadas online, utilizando o Whatsapp® para disseminação. Tinham como objetivo avaliar uma maior propensão dos alunos a serem afetados pela escopofobia.

3.6 VARIÁVEIS

Considerando a falta, até onde sabemos, de uma ferramenta para verificar o risco aumentado de escopofobia, desenvolvemos perguntas, com base na literatura sobre o assunto, para avaliar uma maior propensão dos alunos a serem afetados pela escopofobia. Os alunos foram solicitados a ler os itens e, com base em suas aulas online recentes, responder às perguntas usando uma escala Likert que varia de 1 a 5, onde 1 significa “discordo totalmente” e 5 “concordo totalmente”. Os itens avaliados estão disponíveis na caixa abaixo.

- Com as câmeras ligadas, eu tinha a ilusão de estar perto e realmente ter poucas informações sobre o que estava acontecendo, comparado ao que eu teria sentido com as aulas presenciais.

- Quando a câmera estava ligada, dava-me a impressão de estar constantemente diante de um espelho.

- Quando a câmera estava ligada, senti que estava mais próximo e mais exposto aos outros participantes da aula do que gostaria.

- Quando a câmera estava ligada, parecia que eu estava sendo observada e que todos estavam olhando para mim.

A variável final foi construída da seguinte forma: se o aluno respondesse usando a resposta negativa máxima da escala Likert (“concordo totalmente”), ele

marcaria um ponto naquele item. Se ao final o aluno obtivesse 3 ou 4 pontos nos 4 itens, seria classificado como de alto risco de ter escopofobia.

Como já comentado, a escopofobia tem algumas semelhanças com a fobia social. A Escala Breve de Fobia Social (BSPS) é uma escala avaliada pelo observador projetada para avaliar os sintomas característicos da fobia social, usando três subescalas - medo, evitação e excitação fisiológica - que podem ser combinadas em uma pontuação total. Cada um dos 18 itens da BSPS é ancorado em uma escala de classificação de 5 pontos. Esta escala validada guarda algumas semelhanças com a que propomos para escopofobia, como no item “tem medo de que outras pessoas estejam observando você”. Assim, entendemos que a presente escala pode ter validade.

3.6.1 Aplicação do Questionário Patient Health Questionnaire-9 (PHQ-9)

O PHQ-9 constitui-se de nove perguntas que avaliam a presença de cada um dos sintomas para o episódio de depressão maior, descritos no Manual Diagnóstico e Estatístico dos Transtornos Mentais (DSM-IV). Os nove sintomas consistem em humor deprimido, anedonia, problemas com o sono, cansaço ou falta de energia, mudança no apetite ou peso, sentimento de culpa ou inutilidade, problemas de concentração, sentir-se lento ou inquieto e pensamentos suicidas. A tradução do PHQ-9 para o português foi realizada por psiquiatras brasileiros e a back translation por um dos autores do instrumento original, em estudo publicado previamente. A frequência de cada sintoma nas últimas duas semanas é avaliada em uma escala Likert de 0 a 3 correspondendo às respostas “nenhuma vez”, “vários dias”, “mais da metade dos dias” e “quase todos os dias”, respectivamente. O questionário ainda inclui uma décima pergunta que avalia a interferência desses sintomas no desempenho de atividades diárias, como trabalhar e estudar. (SANTOS; TAVARES; MUNHOZ; ALMEIDA et al., 2013)

3.6.2 Aplicação da escala de fadiga zoom

A versão em inglês da Zoom Exhaustion & Fatigue Scale (ZEF) (FAUVILE et al., 2020) foi utilizada no estudo, estando as questões atualmente validadas para o português brasileiro (MULLER, 2021). Essa escala é composta por um conjunto de

quinze questões, divididas em cinco domínios: geral, visual, social, motivacional e emocional, e avalia possíveis danos psicológicos ocorridos em cada um desses domínios em participantes de interações online, tanto didáticas quanto empresariais. No artigo original, ‘Zoom Fatigue’ foi definido como a fadiga que pode ser sentida durante ou após a participação em uma videoconferência. As variáveis foram utilizadas continuamente, conforme orientação dos desenvolvedores da escala.

Também foi aplicado um questionário autorreferido sobre dados sociodemográficos e hábitos de vida.

3.7 ANÁLISE ESTATÍSTICA

Os resultados quantitativos categóricos serão apresentados em forma de percentuais e contagens e os numéricos em forma de medidas de tendência central. Serão realizados testes de normalidade de Kolmogorov-Smirnov para as variáveis numéricas. Para variáveis categóricas, será utilizado o teste de qui-quadrado para verificar associação. Serão considerados significativos valores de p inferiores a 0,05. Para purificação das medidas, será realizada a Análise Fatorial Exploratória com extração dos componentes principais da primeira metade da amostra (N=250). A AFE será efetuada com rotação ortogonal VARIMAX através da Extração dos Componentes Principais. Os dados obtidos na coleta serão tabulados e analisados pelo software IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp. IBM Corp. Released 2015.

3.8 AVALIAÇÃO DOS RISCOS E BENEFÍCIOS

A presente pesquisa apresenta um risco mínimo aos envolvidos visto que não existe nenhum procedimento invasivo. Caso ocorra algum constrangimento ao responder o questionário as medidas cabíveis serão rapidamente tomadas. Será ressaltado ao participante que sua identidade será preservada e que em caso de qualquer dúvida quanto a sua participação na pesquisa, os pesquisadores estarão disponíveis para responder quaisquer questionamentos de forma imediata.

Os participantes do estudo serão beneficiados com informações sobre prevenção de estresse, ansiedade e fadiga.

3.9 ASPECTOS ÉTICOS

Este estudo respeitou os preceitos éticos da pesquisa em seres humanos. Foram tomados todos os cuidados no sentido de preservar, em qualquer situação, a identidade e a privacidade dos indivíduos incluídos neste estudo. Cada docente recebeu informações detalhadas sobre os procedimentos, riscos e benefícios, e somente foram incluídos no protocolo após assinatura do Termo de Consentimento Livre e Esclarecido. Na aplicação online, o TCLE foi aplicado pela plataforma eletrônica e disponibilizado ao participante. Foram adotados todos os procedimentos necessários para guardar a confidencialidade dos dados coletados. O projeto foi submetido ao Comitê de Ética em Pesquisa (CEP) e assumiu perante o mesmo o compromisso de seguir fielmente os preceitos éticos contidos nas diretrizes e nas normas de pesquisa da resolução 466/2012 do Conselho Nacional de Saúde e o estudo teve início apenas após a aprovação no Comitê de Ética (aprovação nos anexos).

4 ARTIGO ENVIADO PARA PUBLICAÇÃO

ARTIGO 1

Association of scopophobia with online learning fatigue among medical students in Brazil

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ABSTRACT

Background Scopophobia can be described in the medical field as the fear of being watched or stared at. Despite the relevance of scopophobia in remote learning scenarios, which have always existed and have been largely expanded during the pandemic in medical education, studies on this topic are exceedingly rare worldwide. Hence, to fill up this gap, a cross-sectional study of medical students was developed to assess the association of scopophobia with the prevalence of online learning fatigue.

Methods A cross-sectional, quantitative, analytical study was carried out in Medical Schools of Brazil. To assess the risk of scopophobia, questions were developed, based on the literature on the topic. The Zoom Exhaustion & Fatigue Scale (ZEF) was used, and the questions have currently been validated for Brazilian Portuguese. Logistic regression models were also used to assess the relationship of scopophobia risk and ZEF scores.

Results A total of 283 students from Brazil participated in the study. The median age was 23 years, and 64% of the participants were female. In total, 14.5% were considered to be at high risk for scopophobia. It was found that after adjusting for sex, income and number of residents in the household, scopophobia and the total zoom fatigue score remained associated. For the total score, each additional point on the scale increased the chance of scopophobia by 3%, and for the overall domain, 19% (p-values < 0.05).

Conclusions In conclusion, this study shows a relevant prevalence of students with scopophobia, which requires a differentiated approach on the part of teachers. The causes of scopophobia are often specific and have a psychological origin that goes beyond the usual pedagogical management. Therefore, motivation strategies are necessary in a general, as well as an individualized manner, aiming to favor the improvement of the online teaching and learning process.

Keywords: Education, Medical; Fatigue; COVID-19; Education, Medical, Undergraduate

INTRODUCTION

Scopophobia can be described, in the medical field, as the fear of being observed or stared at, mainly by unknown people. It occurs more commonly in women than in men, in addition to being often identified among young individuals. It may also be related to the fear of surveillance or of being manipulated by someone [1; 2; 3]. This phenomenon is present in academic environments, since with the current COVID-19 pandemic, it was necessary to change in-person teaching to the online modality, with the consequent increase in videoconferences [4; 5].

Due to health restrictions during the COVID-19 pandemic, many classes and meetings migrated from in-person to the online modality, through videoconference platforms and interactive websites, including Zoom, which was chosen by many professionals due to its free and easy access. Soon, many people started using the word "zoom" when they referred to the action of making a video call. This abrupt transition from in-person to digital interactions raised discussions about the importance of "Zoom fatigue", which refers to the feeling of exhaustion related to videoconferences after prolonged screen use and is associated with greater intellectual demand that is required in interpersonal relationships during video conferences, as non-verbal language becomes more difficult to perceive [6]. Therefore, "Zoom fatigue" has become frequent among students due to the increased use of remote interactive technologies.

Despite the relevance of scopophobia in the remote learning processes, which have always existed and increased exponentially in medical education during the pandemic, studies on this topic in the world are exceedingly rare. Hence, to fill up this gap, a cross-sectional study of medical students from different institutions from all over Brazil was developed to assess the association of scopophobia and the prevalence of online learning fatigue.

METHODS

Study design

A cross-sectional, quantitative, analytical study was carried out in Medical Schools of Brazil. Social distancing due to the COVID-19 pandemic started in March 2020 in Brazil, when recommendations for maintaining remote medical education began. Despite the partial reopening of schools that took place at the end of 2020, the second wave of the pandemic hit Brazil at the end of 2020 with much more intensity, and all teaching activities were reverted to remote, with in-person activities only restarting in March 2022. The data collection period went from July 2021 to October 2021.

Study population and sample

The study recruited individuals aged 18 years of age and older, of both genders, who attended higher education institutions in Brazil and were medical students. Students who did not use virtual platforms during the pandemic were excluded.

Data collection

The data were collected using electronic Google forms sent to Brazilian Medical Schools, which redirected them to the students.

Variables

Considering the lack, to the best of our knowledge, of a tool to verify the increased risk of scopophobia, we developed questions, based on the literature about the subject, to assess a greater propensity of students to be affected by scopophobia [1; 2; 3; 7]. The students were asked to read the items and, based on their recent online classes, answer the questions using a Likert scale ranging from 1 to 5, where 1 meant “I strongly disagree” and 5 “I strongly agree”. The evaluated items are available in supplementary box 1.

The final variable was constructed as follows: if the student answered by using the maximal negative response on the Likert scale ("I strongly agree"), they would score one point in that item. If at the end the student attained 3 or 4 points in the 4 items, they would be categorized as being at high risk of having scopophobia.

The English version of the Zoom Exhaustion & Fatigue Scale (ZEF) [8] was used in the study, with the questions being currently validated for Brazilian Portuguese.[9] This scale consists in a set of fifteen questions, divided into five domains: overall, visual, social, motivational and emotional, and assesses possible psychological damage occurring in each of these domains in participants of online interactions, both didactic and business ones. In the original article, 'Zoom Fatigue' was defined as the fatigue that can be experienced during or after participating in a videoconference. The variables were used continuously, as instructed by the scale developers. A self-reported questionnaire on sociodemographic data and life habits was also applied.

Statistical analysis

Initially, the descriptive measures of the collected variables were presented, using frequencies and percentages for categorical variables and means and standard deviations for the numerical ones. The chi-square tests were used to verify the statistical association between the measured variables and the teaching methodology. Logistic regression models were also used to verify the occurrence of confounding factors among the variables identified as statistically associated with the outcome in the bivariate analysis. Values of $p < 0.05$ were considered statistically significant. Data were tabulated and statistical calculations were performed using the software Statistical Package for Social Sciences (SPSS), version 23.0 (SPSS Inc., Chicago, United States)®.

Ethical aspects

In the online application, the Free and Informed Consent form was applied through the electronic platform and made available to all participants. All necessary procedures were adopted to keep the collected data confidential. The project was submitted to the Research Ethics Committee (REC) of Unichristus University.

RESULTS

A summary of the baseline characteristics of the study participants, which included 283 medical students, is shown in Table 1. The median age was 23 years, and 64% of the participants were female. Most participants were attending the eighth semester, and the majority were attending from the fourth to the eighth semesters. Additionally, most of the participating students were from the Northeast of Brazil. The family income of a little over three quarters of the participants was greater than five minimum wages, and most students lived with their parents, with 23% reporting the presence of children in the households. At the time of the study, more than 85% of the participants had been dealing with remote classes for more than a year.

Table 1. Description of the sample of evaluated medical students.

	Total (N=283)
How old are you?	
N	283
Median (IQR)	23.0 (21.0, 26.0)
What gender do you identify with?, n (%)	
Female	181 (64.0%)
Male	100 (35.3%)
Other	1 (0.4%)
I would rather not answer it	1 (0.4%)
What semester are you attending ?, n (%)	
1st	1 (0.4%)
2nd	16 (5.7%)
3rd	4 (1.4%)
4th	50 (17.7%)

	Total (N=283)
5th	50 (17.7%)
6th	26 (9.2%)
7th	30 (10.6%)
8th	94 (33.2%)
9th	8 (2.8%)
10th	3 (1.1%)
12th	1 (0.4%)
Region of Brazil, n (%)	
Northeast	252 (91.3%)
Southeast	11 (4.0%)
South	13 (4.7%)
Missing information	7
What is your occupation?, n (%)	
Others	1 (0.4%)
I only study	246 (86.9%)
I work and study	36 (12.7%)
What is your family income?, n (%)	
Up to 1 MW	10 (3.5%)
UP to 3 MWs	31 (11.0%)
Up to 5 MWs	25 (8.8%)
More than 5 MWs	217 (76.7%)
How many people do you live with?, n (%)	
I live alone	20 (7.1%)
With 1 person	49 (17.3%)
With 2 to 4 people	174 (61.5%)
With 5 or more people	40 (14.1%)
Do you live with:, n (%)	
Parents	190 (67.1%)
Partner	41 (14.5%)
Alone	20 (7.1%)
Other	32 (11.3%)
Are there any children living with you? n (%)	
No	216 (76.3%)
Yes	67 (23.7%)
Do you think your academic performance during remote classes was:, n (%)	
Better than usual	74 (26.1%)
The same as usual	71 (25.1%)
Worse than usual	138 (48.8%)
If you have done so, how long have you participated in remote classes?, n (%)	
6 months	16 (5.7%)
1 year	25 (8.8%)

	Total (N=283)
More than one year	242 (85.5%)

MW = minimum wage

The medical students' perceptions about the use of cameras in remote teaching are shown in Table 2. About half of the respondents reported turning on their cameras during online classes, and 83.9% stated that they did so because it was mandatory, rather than because they thought it was important. On a scale of 0 to 10, students rated with a median score of 5 the importance of turning on the cameras during class, and of 4 how comfortable they felt when leaving the cameras on during class. A total of 48.7% disagreed that they were able to concentrate more when they left the cameras on and more than 40% of the students attended one or more online classes a day. Among the characteristics associated with scopophobia, 30% agreed that they felt like they were missing information when compared to if they were attending an in-person class; 50.8% thought they were looking into a mirror; 34.6% disagreed they felt closer to other participants and 50.9 agreed that they felt like they were being watched when the cameras were turned on. In total, 14.5% were considered to be at high risk for scopophobia. (Table 2)

Table 2. Medical students' impressions on the use of cameras during remote teaching.

	Total (N=283)
If yes, did you turn on your camera during online classes last semester?, n (%)	
No	144 (50.9%)
Yes	139 (49.1%)
If yes, did you turn it on because it was mandatory or do you think it is important to turn on the camera during online classes? ,n (%)	
I thought it was important	36 (16.1%)
Because it was mandatory	188 (83.9%)
Missing information	59
On a scale of 0 to 10, where 0 is little and 10 is a lot, how important did you think it was to turn on your camera during online classes last semester?	
N	283
Median (IQR)	5.0 (2.0, 7.0)

	Total (N=283)
On a scale of 0 to 10, where 0 is little and 10 is a lot, how comfortable were you with turning on your camera during online classes last semester?	
N	283
Median (IQR)	4.0 (1.0, 7.0)
I thought the class was more productive when everyone had the camera on., n (%)	
1	114 (40.3%)
2	46 (16.3%)
3	40 (14.1%)
4	41 (14.5%)
5	42 (14.8%)
I was able to concentrate more on class when the camera was on., n (%)	
1	102 (36.0%)
2	36 (12.7%)
3	53 (18.7%)
4	39 (13.8%)
5	53 (18.7%)
How often do you participate in video conferences, on average?, n (%)	
Never	17 (6.0%)
Once a month	45 (15.9%)
Once a week	107 (37.8%)
Once a day	40 (14.1%)
Several times a day	74 (26.1%)
With the cameras on, I had the illusion of being close and actually having little information about what was going on, compared to what I would have felt with in-person classes., n (%)	
I strongly disagree	85 (30.0%)
I disagree	44 (15.5%)
I neither agree, not disagree	69 (24.4%)
I agree	42 (14.8%)
I strongly agree	43 (15.2%)
When the camera was on, it gave me the impression that I was constantly looking into a mirror., n (%)	
I strongly disagree	63 (22.3%)
I disagree	38 (13.4%)
I neither agree, not disagree	38 (13.4%)
I agree	59 (20.8%)
I strongly agree	85 (30.0%)
When the camera was on, it made me feel like I was closer and more exposed to the other participants in the class than I would like to be., n (%)	
I strongly disagree	55 (19.4%)
I disagree	43 (15.2%)

	Total (N=283)
I neither agree, not disagree	46 (16.3%)
I agree	66 (23.3%)
I strongly agree	73 (25.8%)
When the camera was on, it made me feel like I was being watched and that everyone was looking at me., n (%)	
I strongly disagree	55 (19.4%)
I disagree	35 (12.4%)
I neither agree, not disagree	49 (17.3%)
I agree	47 (16.6%)
I strongly agree	97 (34.3%)
High risk of scopophobia, n (%)	
No	242 (85.5%)
Yes	41 (14.5%)
ZEF, total score	
N	283
Median (IQR)	40.0 (29.0, 50.0)
ZEF, overall score	
N	283
Median (IQR)	9.0 (7.0, 12.0)
ZEF, visual score	
N	283
Median (IQR)	6.0 (5.0, 9.0)
ZEF, social score	
N	283
Median (IQR)	6.0 (4.0, 10.0)
ZEF, motivational score	
N	283
Median (IQR)	9.0 (7.0, 12.0)
ZEF, emotional score	
N	283
Median (IQR)	7.0 (5.0, 10.0)

When studying the factors associated with a high risk of scopophobia, we can observe that females have a higher prevalence of high risk, as seen in Table 3. Also, having a lower family income and living alone were also associated with a higher occurrence of scopophobia. The total zoom fatigue score, as shown in Figure 1, as well as all its domains, were statistically associated with scopophobia, with higher scores being verified in positive cases.

Table 3. Factors associated with scopophobia in the assessed sample.

	High risk of scopophobia			
	No (N=242)	Yes (N=41)	Total (N=283)	p-value
How old are you?				0.9140[1]
N	242	41	283	
Median (IQR)	22.0 (21.0, 26.0)	23.0 (21.0, 25.0)	23.0 (21.0, 26.0)	
What gender do you identify with?, n (%)				0.0231[2]
Female	150 (62.0%)	31 (75.6%)	181 (64.0%)	
Male	91 (37.6%)	9 (22.0%)	100 (35.3%)	
Other	1 (0.4%)	0 (0.0%)	1 (0.4%)	
I would rather not answer it	0 (0.0%)	1 (2.4%)	1 (0.4%)	
What semester are you attending?, n (%)				0.0330[2]
1st	1 (0.4%)	0 (0.0%)	1 (0.4%)	
2nd	12 (5.0%)	4 (9.8%)	16 (5.7%)	
3rd	2 (0.8%)	2 (4.9%)	4 (1.4%)	
4th	43 (17.8%)	7 (17.1%)	50 (17.7%)	
5th	46 (19.0%)	4 (9.8%)	50 (17.7%)	
6th	19 (7.9%)	7 (17.1%)	26 (9.2%)	
7th	24 (9.9%)	6 (14.6%)	30 (10.6%)	
8th	85 (35.1%)	9 (22.0%)	94 (33.2%)	
9th	7 (2.9%)	1 (2.4%)	8 (2.8%)	
10th	3 (1.2%)	0 (0.0%)	3 (1.1%)	
12th	0 (0.0%)	1 (2.4%)	1 (0.4%)	
Region of Brazil, n (%)				0.2663[2]
Northeast	219 (92.4%)	33 (84.6%)	252 (91.3%)	
Southeast	8 (3.4%)	3 (7.7%)	11 (4.0%)	
South	10 (4.2%)	3 (7.7%)	13 (4.7%)	
Missing information	5	2	7	
What is your occupation?, n (%)				0.4836[2]
Others	1 (0.4%)	0 (0.0%)	1 (0.4%)	
I only study	208 (86.0%)	38 (92.7%)	246 (86.9%)	
I work and study	33 (13.6%)	3 (7.3%)	36 (12.7%)	
What is your family income?, n (%)				0.0182[2]
Up to 1 MW	6 (2.5%)	4 (9.8%)	10 (3.5%)	
Up to 3 MWs	23 (9.5%)	8 (19.5%)	31 (11.0%)	
Up to 5 MWs	21 (8.7%)	4 (9.8%)	25 (8.8%)	
More than 5 MWs	192 (79.3%)	25 (61.0%)	217 (76.7%)	
How many people do you live with:, n (%)				0.0011[2]
With 1 person	40 (16.5%)	9 (22.0%)	49 (17.3%)	
With 2 to 4 people	158 (65.3%)	16 (39.0%)	174 (61.5%)	
With 5 or more people	32 (13.2%)	8 (19.5%)	40 (14.1%)	
I live alone	12 (5.0%)	8 (19.5%)	20 (7.1%)	

	High risk of scopophobia			
	No (N=242)	Yes (N=41)	Total (N=283)	p-value
Do you live with:, n (%)				0.0618[2]
Partner	36 (14.9%)	5 (12.2%)	41 (14.5%)	
Other	28 (11.6%)	4 (9.8%)	32 (11.3%)	
Parent(s)	165 (68.2%)	25 (61.0%)	190 (67.1%)	
Alone	13 (5.4%)	7 (17.1%)	20 (7.1%)	
Are there any children living with you?, n (%)				0.9072[2]
No	185 (76.4%)	31 (75.6%)	216 (76.3%)	
Yes	57 (23.6%)	10 (24.4%)	67 (23.7%)	
Do you think your academic performance during remote classes was:, n (%)				0.7528[2]
The same as usual	61 (25.2%)	10 (24.4%)	71 (25.1%)	
Better than usual	65 (26.9%)	9 (22.0%)	74 (26.1%)	
Worse than usual	116 (47.9%)	22 (53.7%)	138 (48.8%)	
ZEF, total score				0.0023[1]
N	242	41	283	
Median (IQR)	39.0 (28.0, 49.0)	49.0 (38.0, 58.0)	40.0 (29.0, 50.0)	
ZEF, overall score				0.0004[1]
N	242	41	283	
Median (IQR)	9.0 (7.0, 12.0)	12.0 (9.0, 14.0)	9.0 (7.0, 12.0)	
ZEF, visual score				0.0081[1]
N	242	41	283	
Median (IQR)	6.0 (4.0, 9.0)	9.0 (6.0, 10.0)	6.0 (5.0, 9.0)	
ZEF, social score				0.0280[1]
N	242	41	283	
Median (IQR)	6.0 (4.0, 9.0)	8.0 (6.0, 12.0)	6.0 (4.0, 10.0)	
ZEF, motivational score				0.0152[1]
N	242	41	283	
Median (IQR)	9.0 (7.0, 12.0)	11.0 (8.0, 13.0)	9.0 (7.0, 12.0)	
ZEF, emotional score				0.0026[1]
N	242	41	283	
Median (IQR)	7.0 (4.0, 9.0)	10.0 (6.0, 11.0)	7.0 (5.0, 10.0)	

[1]Kruskal-Wallis p-value; [2]Chi-Square p-value; MW = minimum wage

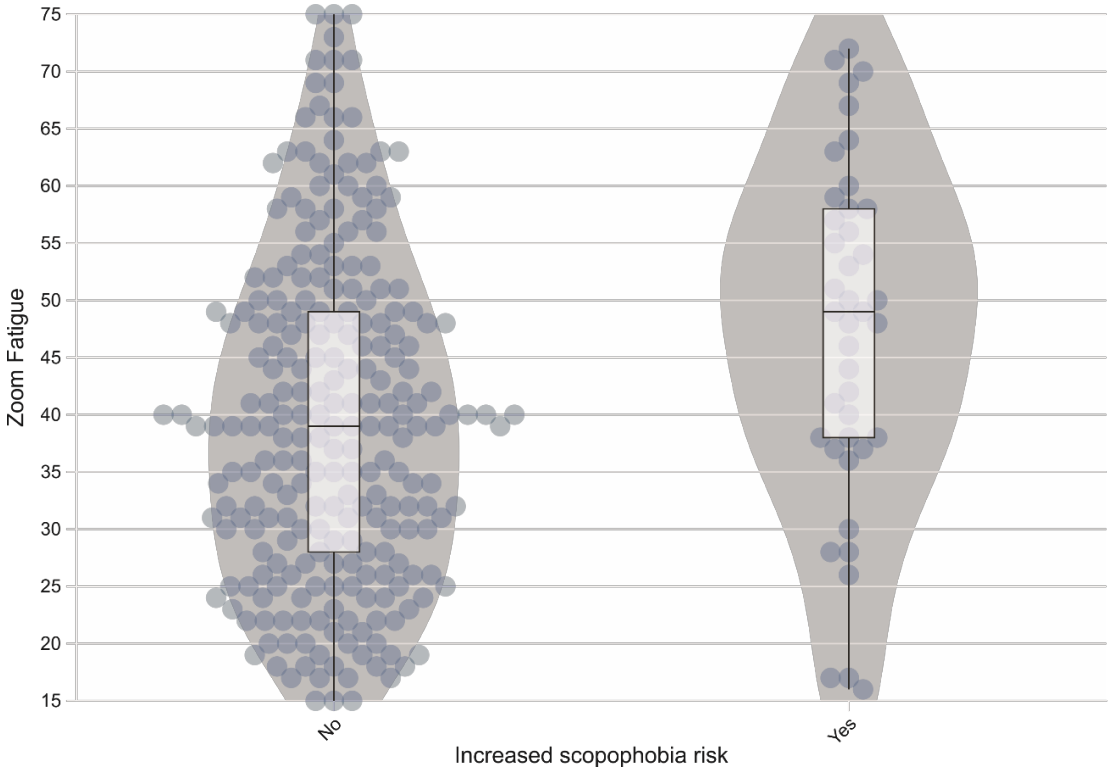

Figure 1. Violin plot of the distribution of the total score of the zoom fatigue scale according to the presence of high risk of scopophobia.

After the bivariate analysis, the factors identified as associated with scopophobia were used to construct the multivariate model, shown in Figure 2. It was found that after adjusting for sex, income and number of residents in the household, the total zoom fatigue score and the scores of the overall, visual and emotional domains remained associated with scopophobia, with statistical significance. For the total score, each additional point on the scale increased the chance of scopophobia by 3%, and for the overall score, 19% (Figure 2).

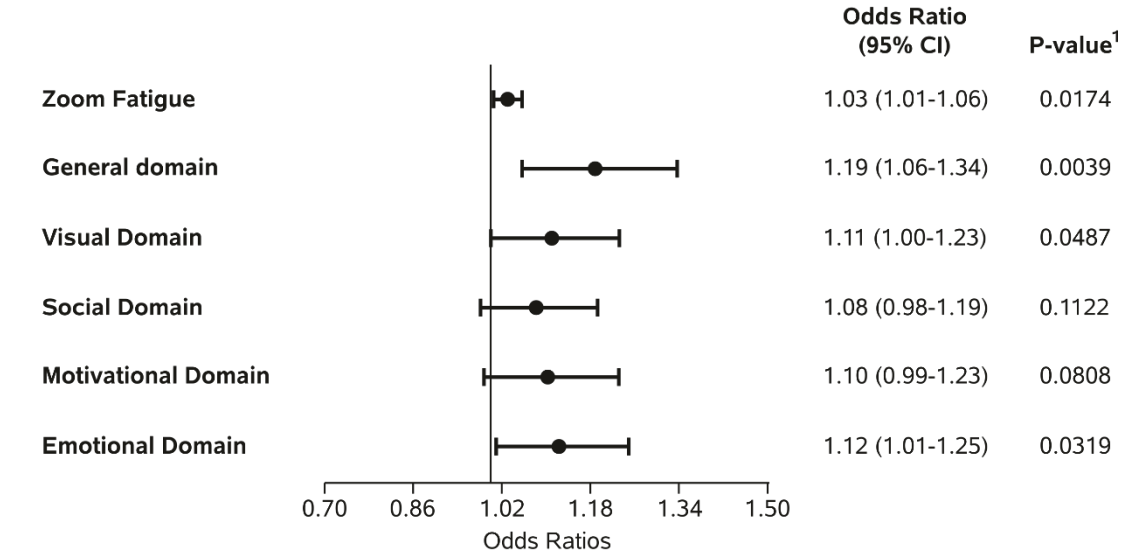

Figure 2. Forest plot of the adjusted odds ratios of the association of scores of the zoom fatigue scale and the presence of high risk of scopophobia.

DISCUSSION

In this study carried out during the period of social distancing due to the COVID-19 pandemic, it was observed that the prevalence of a high risk of scopophobia among medical students is high, being associated with the prevalence of zoom fatigue, with a higher prevalence being identified in students with higher scores of zoom fatigue.

The use of cameras during a synchronous class represents a great challenge in hybrid learning, as well as in remote learning that was intensely experienced during the COVID-19 pandemic. The present study showed that approximately 50% of the students turned on the cameras during synchronous classes and had a reasonable perception of its importance and comfort when using them. One of the reasons for choosing to keep the camera on may be found in the study by Živilė Sederevičiūtė-Pačiauskienė et al., where students experienced social distancing when their peers turned off the camera and felt less likely to participate when not using

their video cameras. Therefore, the students associated the use of the video cameras with the community, integration and cooperative assistance [1].

The students understood that, without the cameras, they lose their relationships with teachers and classmates; in that case, the social interaction would be absent and "social learning would not occur" [10]. However, 34.6% of the students analyzed in the present study disagree with the fact of feeling closer to other participants in online classes when they have the camera on.

Other studies corroborating the same reasoning have shown that student-teacher relationships during video learning are crucial for academic success and student satisfaction [11; 12]. Along the same line of thought, Garrison et al. (1999) adapting Dewey's philosophy, said that three central elements must be present in the online environment to facilitate learning: a social presence, a cognitive presence and a teacher presence [13]. In addition, when the cameras are on, they are positively implicated in favoring non-verbal communication in the virtual learning environment. This body cue through facial expressions plays an essential role, since much of human communication occurs through non-verbal communication (body language) and the latter must always be synchronized with verbal communication to attain its full function [14]. With regard to learning through active methodologies, Kubrusly et al. showed that during the online tutorial session, most tutors agree with the need to leave the cameras on during the sessions, at the risk of negatively affecting the tutor-student interaction and, consequently, the formative assessment of the tutorial session [15]. Despite the described justifications, Bradner and Mark (2001) showed that visual feedback from a collaborating partner (or observer) is not necessary to create a sense of presence [16].

On the other hand, we showed that more than 50% of the students did not turn on the cameras during the synchronous classes in the last semester, which is in disagreement with the

results of FR Castelli and MA Sarvary (2020) with undergraduate students, who revealed several reasons why students do not turn on their video cameras; among the most important concerns were those about one's personal appearance and other people's opinions [4]. Furthermore, Nowak et al. observed that people prefer to perform a task using less effort than more effort [17]. If the students could participate in the synchronous remote learning classroom with an audio setup only, they would likely choose this option. Moreover, switching to online teaching was a baptism of fire for many students, as they lacked the experience and trust in online teaching and described the progress of online learning as a sort of "black box", clearly frustrated by the lack of direct interaction and feedbacks [18].

In addition to the students' preference to turn off the cameras, only 18.7% of the interviewees had a perception of a maximum concentration by keeping the cameras on. This low percentage of concentration can be explained by the increase in sustained attention of videoconferences, making them more exhausting than in-person sessions and due to the greater demand for focus than in-person classes [19]. This occurs because we have to work a little harder to process the body language as well as one's tone of voice, which means "we cannot naturally relax into the conversation" [20]. Regarding the obligation to turn on the cameras, 83.9% of the students in our study declared they did it because it was mandatory, rather than because they thought it was important.

Overall, experts disagree on this obligation to turn on the camera and microphone during class. Some come together to state that schools can compel the students to do so, while others disagree, and understand that it would be a violation of the young people's rights[21]. Castelli and Sarvary, 2021, proposed strategies to encourage – without demanding – the use of cameras, while promoting equity and inclusion [4]. By explaining to students the rationale behind recommending the use of the camera during synchronous class sessions, the instructor helps to set the standards for the course and maintains the transparency on how the camera use will improve

the learning experience. Thus, our results show the need to increasingly strengthen the students' motivation, the feeling of belonging during online activities. This can be achieved by encouraging students to use their cameras during synchronous remote classes and equally promoting interactive participation; this will be essential, especially for first-year students who are still developing virtual learning habits, a learning activity that was strengthened during the pandemic and which will remain in the pedagogical processes of the current higher educational institutions, being what we now call hybrid teaching. One also must pay attention to the cognitive overload that can result from a greater number of online activities, as well as the time spent using this activity and its methodology. In our study more than 40% of the students attended one or more online classes a day and more than 85% of the participants had been dealing with remote classes for more than a year. Kubrusly et al. showed in their study that the videoconference duration, as well as the type of teaching methodology used can be decisive for the onset of zoom fatigue [22].

The digital leap has spurred a global debate with education experts about the use of webcams in online classes. The refusal to keep the camera on by some of the students cannot be interpreted exclusively as favoring the students' non-participation in classes, preventing them from answering questions and being justified by the lack of connectivity. Its cause is multifactorial, such as personality traits, contextual factors, including human, family and technological resources available to students [23]. The present study showed the percentages of some psychological impacts that were asked to students in relation to the use of cameras. About 51% of the respondents had the impression they were looking into a "mirror" during online classes. When the student looks at their self-view video, the video appears as if they are looking at their reflection in a mirror, leading to a state of self-awareness, i.e., the video is always on and showing your appearance [24]. It can also lead to a state of public self-awareness, where the student focuses attention on aspects of themselves that can be perceived by others. This level of concern that

the student has with their appearance may be due to a number of different psychological and social factors that are beyond the teacher's control [4]. The “spotlight effect”, i.e., the students' feeling that they are being watched more than they really are, was perceived by 50.9% of the students, which represents a stress factor. This finding may also be related to the “information bias”, which is when people favor information that confirms beliefs they already had, thus processing the information in a more negative way and focusing on what confirms that belief [20].

The total score of zoom fatigue, as shown in Figure 1, as well as all its domains, were statistically associated with scopophobia, which is to be expected since, among the causes of this syndrome are ; (1) the increased cognitive load due to the effort required to guess the non-verbal messages of others, whereas in real-life interactions, they flow naturally and effortlessly; (2) looking at one’s own face all day makes us more self-aware and more critical of our “self-awareness” appearance, and (3) there is a reduced capacity to move and gesture during online activities, which negatively affects the creativity and efficiency of a meeting. Additionally, online interactions are perceived as artificial; even with the cameras on, zoom fatigue is a problem for many individuals. Also, someone can be distracted by their own face and trying to look good and interested, which tends to affect one’s concentration [25].

This study has some limitations. First, as this is a cross-sectional study, associations that are not causal or show reverse causality can be observed. However, it is important to note that the two conditions can feed back into each other. Second, we used scales that screens scopophobia and zoom fatigue but are not diagnostic of clinical disorders. Despite these facts, the validity of the zoom fatigue scale has been demonstrated, and we were very conservative with the scopophobia scale and still found a high prevalence. Finally, the application of online questionnaires may have led to a non-random selection.

Thus, considering that online learning may persist for years beyond the COVID-19 pandemic, it is important to know and provide instructions on how to reduce scopophobia and the

associated video conference fatigue. In conclusion, this study shows a significant prevalence of scopophobia among medical students, which supports the need for a differentiated approach by the teachers. The causes of scopophobia are often specific and have a psychological origin that goes beyond the usual pedagogical management. Therefore, motivation strategies are necessary in a general as well as individualized manner, aiming to improve the online teaching and learning process.

DECLARATIONS

Ethics approval and consent to participate

Written informed consent was obtained from participants. The survey was approved by the Research Ethics Committee *Comitê de ética em Pesquisa da Unichristus* in Brazil. All methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no conflict of interest.

Sources of Funding

None.

Authors´ Contributions

Author's contributions were as follows: MSA, CMCO, HALR, INV, PIM, MK have made substantial contributions to conception and design. MSA, INV, HALR, MK revised the manuscript critically for relevant intellectual content. All authors approved the submission.

LIST OF ABBREVIATIONS

PBL - Problem-Based Learning

COMPETING INTERESTS

The authors declare that they have no conflict of interest.

References

1 ELLER, K. Scopophobia. 2011.

2 LORMEL, S. T. **Une histoire japonaise de la névrose: la phobie interpersonnelle (taijinkyōfu) 1930-1970. Emergence, développement et circulation d'un diagnostic psychiatrique**. 2018. Inalco, ED 265

3 SOBIESKA, A. Scopophobia (lęk przed spojrzeniem) i marzenia o bezwstydzie—Leśmianowska fenomenologia wstydu. **Napis. Pismo poświęcone literaturze okolicznościowej i użytkowej,** v. 18, p. 217-227, 2012. ISSN 1507-4153.

4 CASTELLI, F. R.; SARVARY, M. A. Why students do not turn on their video cameras during online classes and an equitable and inclusive plan to encourage them to do so. **Ecology and Evolution,** v. 11, n. 8, p. 3565-3576, 2021. ISSN 2045-7758.

5 PESQUISA, A. EM ARTE EM TRÊS ATOS. **Catalogação na Publicação Serviço de Biblioteca e Documentação Escola de Comunicações e Artes da Universidade de São Paulo**, p. 44, 2016.

6 FAUVILLE, G. et al. Zoom Exhaustion & Fatigue Scale. **Computers in Human Behavior Reports,** v. 4, p. 100119, 2021/08/01/ 2021. ISSN 2451-9588. Disponível em: < https://www.sciencedirect.com/science/article/pii/S2451958821000671 >.

7 OGAWA, T.; BOUDERLIQUE, J. [Anthropophobia: psychopathological approach to the interactions between body, inter-subjectivity and language]. **Jpn J Psychiatry Neurol,** v. 48, n. 3, p. 527-32, Sep 1994. ISSN 0912-2036 (Print) 912-2036.

8 FAUVILLE, G. R. et al. **Nonverbal Mechanisms Predict Zoom Fatigue and Explain Why Women Experience Higher Levels than Men**. SSRN**:** 18 p. 2021.

9 MULLER QUEIROZ, A. C. et al. Tradução, validação e aplicação da Escala ZEF (ZEF Scale) para avaliação da Fadiga Zoom na população brasileira (Translation, validation and application of the ZEF Scale to assess Zoom Fatigue in the Brazilian population). **Available at SSRN**, 2021.

10 SEDEREVIČIŪTĖ-PAČIAUSKIENĖ, Ž.; VALANTINAITĖ, I.; ASAKAVIČIŪTĖ, V. 'Should I Turn on My Video Camera?' The Students' Perceptions of the use of Video Cameras in Synchronous Distant Learning. **Electronics,** v. 11, n. 5, 2022. ISSN 2079-9292.

11 BUBER, M. **Dialogo principas/Vertė Tomas Sodeika**: Vilnius 1998.

12 MARTIN, J. Building relationships and increasing engagement in the virtual classroom: Practical tools for the online instructor. **Journal of Educators Online,** v. 16, n. 1, p. n1, 2019.

[13] GARRISON, D. R.; ANDERSON, T.; ARCHER, W. Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. **The Internet and Higher Education,** v. 2, n. 2, p. 87-105, 1999/03/01/ 1999. ISSN 1096-7516. Disponível em: < https://www.sciencedirect.com/science/article/pii/S1096751600000166 >.

[14] LEONARD, T. The challenge of being resilient in the face of Zoom fatigue Austin American Statesmen, 2020. Disponível em: < https://www.statesman.com/story/news/local/westlake/2020/04/28/challenge-of-being-resilient-in-face-of-zoom-fatigue/1282412007/ >.

[15] KUBRUSLY, M. et al. Percepção docente sobre a Aprendizagem Baseada em Problemas no ensino remoto durante a pandemia COVID-19. **Research, Society and Development,** v. 10, n. 5, p. e53510515280-e53510515280, 2021. ISSN 2525-3409.

[16] BRADNER, E.; MARK, G. **Social presence with video and application sharing**. 2001. 154-161 p.

[17] NOWAK, K. L.; WATT, J.; WALTHER, J. B. Computer mediated teamwork and the efficiency framework: Exploring the influence of synchrony and cues on media satisfaction and outcome success. **Computers in Human Behavior,** v. 25, n. 5, p. 1108-1119, 2009. ISSN 0747-5632.

[18] **Is there anybody out there? The 'black box' of online learning progress**. Pearson 2020.

[19] SPATARO, J. The future of work—the good, the challenging & the unknown. Microsoft, 2020. Disponível em: < https://www.microsoft.com/en-us/microsoft-365/blog/2020/07/08/future-work-good-challenging-unknown/ >.

[20] InnerDrive, Disponível em: < https://blog.innerdrive.co.uk/zoom-fatigue >.

[21] TERADA, Y. **The Camera-On/Camera-Off Dilemmac**. Edutopia 2021.

[22] DE OLIVEIRA KUBRUSLY SOBRAL, J. B. et al. Active methodologies association with online learning fatigue among medical students. **BMC Medical Education,** v. 22, n. 1, 2022. ISSN 1472-6920. Disponível em: < https://dx.doi.org/10.1186/s12909-022-03143-x >.

[23] HOSSZU, A. et al. Webcams and Social Interaction During Online Classes: Identity Work, Presentation of Self, and Well-Being. **Frontiers in Psychology,** v. 12, 2022. ISSN 1664-1078. Disponível em: < https://www.frontiersin.org/article/10.3389/fpsyg.2021.761427 >.

[24] *PETRIGLIERI, G.* **How to Deal with Video Calls, Zoom Fatigue, and Remote Relationships**. Goop.

[25] SMITH, D. **Stanford:'Zoom Fatigue'is Real and Now We Know What Causes It** 2021.

ARTIGO 2

Depression among medical students in Brazil exposed to remote learning and scopophobia

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ABSTRACT

Background Medical education was greatly affected by the COVID19 pandemic as most universities had to suspend their classroom clinical classes and practices and implement teaching through digital technologies. One of the most used strategies was remote teaching through lectures and classes through videoconferencing. However, the need to use cameras led to scopophobia, which is the fear of being watched. Studies have shown that being directly observed while speaking can cause psychological and physical symptoms. Despite the relevance and prevalence of depression among medical students, and the increase on the use of cameras for remote learning, research evaluating the impact of scopophobia in medical students mental health is surprisingly scarce. Hence, to fill up this gap,

Methods A cross-sectional, quantitative, analytical study was carried out in Medical Schools of Brazil. The data collection period went from July 2021 to October 2021. We enrolled students aged over 18 years of age, of both genders, who are linked to higher education institutions and attending medical courses in Brazil were included in the study. Students who did not use virtual platforms during the pandemic were excluded. To assess the presence of depressed mood, the Patient Health Questionnaire -9 (PHQ-9) was applied. We used logistic regression models to verify the association between the factors studied.

Results The overall prevalence of positive PHQ9 found in our study was 62%. By studying the factors associated with high risk of scophobia, we can identify that the PHQ was statistically associated with scopophobia (Odds Ratio 0.41 (confidence interval 0.19 – 0.90), p-value 0.0269, reference negative PHQ). Also, a lower family income, the number of household inhabitants and female gender were also associated with higher chances of scopophobia. After multivariate adjustment, the association remained ($p = 0.0248$).

Conclusions The present study suggests that there is a high prevalence of depression among medical students and that scopophobia in students exposed to remote learning is associated

with depression, leading us to believe that interventions to mitigate this risk in students exposed to remote teaching are opportune, especially if target to lower-income women.

Keywords: Depression; Education, Medical; Fatigue; COVID-19; Education, Medical, Undergraduate

INTRODUCTION

The new coronavirus (Sars-CoV-2) spread extremely quickly throughout the world, and as there were no effective drugs or vaccines to combat it, it was necessary to implement isolation measures in the population, with the closure including schools and universities[1, 2]. With such a scenario, medical education was greatly affected since most universities had to suspend their classroom clinical classes and practices and implement teaching through digital technologies.[3]. In order to mitigate the damage caused by the impossibility of face-to-face teaching and experiences, it was suggested that virtual clinical experiences could be used simulating real everyday situations, with the use of telemedicine practices to improve student learning during the pandemic.[3].

One of the strategies most used by medical schools during the pandemic was remote teaching through lectures and classes through videoconferencing.[4, 5]. This solution was considered by many people to be great for allowing flexibility in study schedules and greater presence in classes, but it had negative points such as the lack of motivation reported by the students, the low interaction between students and the risks of social isolation in addition to high stress levels[6, 7]. In addition, another problem that was not much experienced before, but that was touched upon due to the need to use cameras during classes in many educational institutions, was scopophobia, which is the fear of being observed. Studies have shown that being directly observed while speaking can cause psychological and physical symptoms.[8]. For some, turning on the camera can be considered the same as putting the student in front of a mirror, which can trigger trauma and worsen conditions for people with mental disorders.[9]. In this way, scopophobia is present in teaching as the need to use cameras has become, in some institutions, a requirement to attend classes, bringing out the cases of this phobia, since it is difficult to know if a person is being directly observed, unlike face-to-face situations where eye contact is used sparingly[10].

Added to this stressful scenario is the fact that for decades studies carried out with medical students in several countries have shown worryingly high rates of psychiatric symptoms, stress, exhaustion and substance misuse.[11-14]. Medical students have a higher prevalence of anxiety and depressive symptoms than the general population, which can be explained by the high stressors that include excessive workload and study, sleep deprivation, impositions of emotional overload and financial pressure.[15, 16]. With the COVID-19 pandemic, the unpredictability of the disease, the loss and infection of family members, prolonged social distancing and isolation were added to these stressors, which contributed to an increase in the prevalence of anxiety (3.6% to 36%) and depression (4.4% to 39%) among university students when compared to the 2015 global prevalence according to the WHO[17, 18]. In this way, the pandemic can negatively contribute to the mental health of medical students.

Despite the relevance and prevalence of depression among medical students, and the increase on the use of cameras for remote learning, research evaluating the impact of scopophobia in medical students mental health is surprisingly scarce. Hence, to fill up this gap, a cross-sectional study of Brazilian medical students from different institutions was developed to assess the association of increased risk of scopophobia and the prevalence of depression.

METHODS

study design

A cross-sectional, quantitative, analytical study was carried out in Medical Schools of Brazil. Social distancing due to the COVID19 pandemic began in Brazil in March 2020, when recommendations for maintaining remote medical education began. Despite the partial reopening that took place at the end of 2020, the second wave of the pandemic hit Brazil at the end of 2020 with much more force, and all teaching activities were reverted to remote, with

face-to-face activities only restarting in March 2022. The data collection period went from July 2021 to October 2021.

Study population and sample

We enrolled students aged over 18 years of age, of both genders, who are linked to higher education institutions and attending medical courses in Brazil were included in the study. Students who did not use virtual platforms during the pandemic were excluded.

data collection

Data were collected using electronic Google forms, sent to Brazilian Medical Schools that redirected the forms to the students.

variables

Considering the lack, to the best of our knowledge, of a tool to verify the increased risk of scopophobia, we developed questions, based on the literature on the subject, to assess a greater propensity of students to be affected by scopophobia.[4, 9]. Students were asked to read the items and, based on their recent online classes, respond on a Likert scale of 1 to 5, where 1 was strongly disagree and 5 strongly agree. The items evaluated were:

With the cameras on, I had the illusion of being close and actually having little information about what was happening compared to what I would have with physical presence.

The camera on gave me the impression that I was constantly in front of a mirror.

The camera turned on made me feel closer and more exposed than I would have liked to the other participants in the class.

The camera on made me feel like I was being watched and that everyone was looking at me.

The final variable was constructed as follows: if the student answered the maximum negative on the Likert scale (“strongly agree”), he would be scored with one point in that item. If at the end the student added 3 or 4 points in the 4 items, he was categorized as at high risk of presenting scopophobia.

To assess the presence of depressed mood, the Patient Health Questionnaire -9 (PHQ-9) was applied. The PHQ-9 consists of nine questions that assess the presence of each of the symptoms for the episode of major depression, described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)[19]. The nine symptoms consist of depressed mood, anhedonia (loss of interest or pleasure in doing things), problems with sleep, tiredness or lack of energy, change in appetite or weight, feelings of guilt or worthlessness, problems concentrating, being sluggish or restless and suicidal thoughts. The frequency of each symptom in the last two weeks is evaluated on a Likert scale from 0 to 3 corresponding to the answers "not once", "several days", "more than half of the days" and "almost every day", respectively. The questionnaire also includes a tenth question that assesses the interference of these symptoms in the performance of daily activities, such as working and studying. A nine-point cutoff point was used, according to Brazilian validation, which provides good sensitivity (77.5%; 61.5-89) [20]

The self-reported sociodemographic and habits questionnaire was also applied.

Statistical analysis

Initially, the descriptive measures of the collected variables were presented, using frequencies and percentages for categorical variables and means and standard deviations for the numerical ones. We used bivariate logistic regression models to verify the association between the factors studied and scopophobia, as well as multivariate models to verify the occurrence of confounding between the variables identified as statistically associated with the outcome in the

bivariate analysis. Values of p <0.05 were considered significant. Data were tabulated and statistical calculations were performed using the Statistical Package for Social Sciences (SPSS) software, version 23.0 (SPSS Inc., Chicago, United States)®.

Ethical Aspects

Free and Informed Consent form was applied through the electronic platform and made available to all participants. All necessary procedures were adopted to keep the collected data confidential. The project was submitted to the Research Ethics Committee (REC) of Unichristus.

RESULTS

A summary of the baseline characteristics of the study participants, which included 283 medical students, is shown in Table 1. The median age was 23 years (interquartile range 21 - 26), and 35.3% of the participants were male. Most participants were attending from the fourth to the eighth semester of the medical course, which has 12 semesters in Brazil. 91.3% of the participating students were from the Northeast of Brazil. The family income of 76.7% of the participants was greater than 5 minimum wages, and most students live with their parents. Almost half of the students (48.8%) reported that their academic performance had deteriorated. On the date of the study, more than 85% of the participants had been dealing with remote classes for more than a year.

Table 1. Description of the sample of medical students evaluated.

	Total(N=283)
How old are you?	
N	283
Median (IQR)	23.0 (21.0, 26.0)
What gender do you identify with?, n (%)	
Female	181 (64.0%)
Male	100 (35.3%)

	Total(N=283)
Other	1 (0.4%)
Rather not answer	1 (0.4%)
What is your semester?, n (%)	
1	1 (0.4%)
2	16 (5.7%)
3	4 (1.4%)
4	50 (17.7%)
5	50 (17.7%)
6	26 (9.2%)
7	30 (10.6%)
8	94 (33.2%)
9	8 (2.8%)
10	3 (1.1%)
12	1 (0.4%)
Brazil region, n (%)	
North East	252 (91.3%)
Southeast	11 (4.0%)
South	13 (4.7%)
Missing	7
What is your occupation?, n (%)	
Just study	246 (86.9%)
Work and study	36 (12.7%)
Others	1 (0.4%)
What is your family income?, n (%)	
Up to 1 salary	10 (3.5%)
Up to 3 salaries	31 (11.0%)
Up to 5 salaries	25 (8.8%)
More than 5 salaries	217 (76.7%)
How many family members do you live with?, n (%)	
Alone	20 (7.1%)
With 1 person	49 (17.3%)
With 2 to 4 people	174 (61.5%)
with 5 or more	40 (14.1%)
You live with:, n (%)	
Parents	190 (67.1%)
Partner	41 (14.5%)
Alone	20 (7.1%)
Other	32 (11.3%)
Do you think your academic performance during remote classes was:, n (%)	
better than usual	74 (26.1%)
same as normal	71 (25.1%)
worse than usual	138 (48.8%)
If yes, how long have you participated in remote classes?, n (%)	
6 months	16 (5.7%)

	Total(N=283)
1 year	25 (8.8%)
more than 1 year	242 (85.5%)

The medical students' perceptions about the use of cameras in remote teaching are shown in Table 2. Just over half of the respondents reported turning on their cameras during online classes, and 83.9% said they did so out of obligation, and not because they thought it was important. On a scale of 0 to 10, students' assessment revealed a median of 5 on the importance of turning on cameras during class, and of 4 on how comfortable they were with using cameras during class. Among the characteristics associated with scopophobia, 30% agreed that they felt like they were missing information compared to if they were in a face-to-face class; 50.8% thought they were looking at a mirror; 34.6% disagreed with feeling closer to other participants and 50.9 agreed that they felt watched when using the cameras. In total, 14 5% were considered to be at high risk for scopophobia disorder. (table 2)

Table 2. Medical students' impressions of using cameras during Remote Teaching.

	Total(N=283)
If so, did you turn on your camera during online classes last semester?, n (%)	
No	144 (50.9%)
Yea	139 (49.1%)
If so, did you call out of obligation or do you think it's important to turn on the camera during online classes?, n (%)	
I thought it was important	36 (16.1%)
For obligation	188 (83.9%)
Missing	59
On a scale of 0 to 10, where 0 is little and 10 is a lot, how important were you to turn on your camera during online classes last semester?	
N	283
Median (IQR)	5.0 (2.0, 7.0)
On a scale of 0 to 10, where 0 is little and 10 is a lot, how comfortable were you with turning on your camera during online classes last semester?	
N	283
Median (IQR)	4.0 (1.0, 7.0)

	Total(N=283)
How often do you participate in video conferences, on average?, n (%)	
Several times a day	74 (26.1%)
Once a day	40 (14.1%)
Once a week	107 (37.8%)
Once a month	45 (15.9%)
Never	17 (6.0%)
With the cameras on, I had the illusion of being close and actually having little information about what was happening compared to what I would have with physical presence., n (%)	
I totally agree	43 (15.2%)
I agree	42 (14.8%)
Neither agree nor disagree	69 (24.4%)
I disagree	44 (15.5%)
I totally disagree	85 (30.0%)
The camera on gave me the impression that I was constantly in front of a mirror., n (%)	
I totally agree	85 (30.0%)
I agree	59 (20.8%)
Neither agree nor disagree	38 (13.4%)
I disagree	38 (13.4%)
I totally disagree	63 (22.3%)
The camera turned on made me feel closer and more exposed than I would have liked to the other participants in the class., n (%)	
I totally agree	73 (25.8%)
I agree	66 (23.3%)
Neither agree nor disagree	46 (16.3%)
I disagree	43 (15.2%)
I totally disagree	55 (19.4%)
The camera on made me feel like I was being watched and that everyone was looking at me., n (%)	
I totally agree	97 (34.3%)
I agree	47 (16.6%)
Neither agree nor disagree	49 (17.3%)
I disagree	35 (12.4%)
I totally disagree	55 (19.4%)
High Risk of Scopophobia, n (%)	
No	242 (85.5%)
Yes	41 (14.5%)

Evaluating the prevalence of a positive screening for depression with PHQ9, we found a prevalence of 62,2%. By studying the factors associated with high risk of scophobia, we can

identify that negativity in the PHQ was statistically associated with scopophobia (Odds Ratio 0.41 (confidence interval 0.19 – 0.90), p-value 0.0269), as seen in Table 3 Also, a lower family income, number of household inhabitants and female gender were also associated with higher chances of scopophobia (Table 3).

Table 3. Factors associated with scopophobia in the evaluated sample.

	Events/Total	Odds Ratio(95% CI)	P-value
PHQ positive	41/283		0.02692
negative	9/107	0.41 (0.19-0.90)	0.02691
positive	32/176	Reference	
Sex	40/281		0.06632
Feminine	31/181	2.09 (0.95-4.59)	0.06631
Male	9/100	Reference	
Age	41/282		0.60902
18 to 23 years	27/177	1.71 (0.56-5.18)	0.34291
24 to 29 years	10/63	1.79 (0.52-6.15)	0.35321
30 above	4/42	Reference	
Region of Brazil	39/276		0.28342
North East	33/252	0.50 (0.13-1.92)	0.31421
Southeast	11/3	1.25 (0.20-7.96)	0.81321
South	3/13	Reference	
Occupation	41/283		0.53952
Others	0/1	0.00 (0.00-I)	0.99161
Just study	38/246	2.01 (0.59-6.89)	0.26661
Work and study	3/36	Reference	
Income	41/283		0.02902
Up to 1 salary	4/10	5.12 (1.35-19.40)	0.01631
Up to 3 salaries	8/31	2.67 (1.08-6.61)	0.03351
Up to 5 salaries	4/25	1.46 (0.46-4.61)	0.51591
More than 5 salaries	25/217	Reference	
household habitats	41/283		0.00292
With 1 person	9/49	0.34 (0.11-1.07)	0.06421
With 2 to 4 people	16/174	0.15 (0.05-0.43)	0.00031
With 5 or more	8/40	0.37 (0.11-1.22)	0.10431
Alone	8/20	Reference	
household members	41/283		0.08672
Partner	5/41	0.26 (0.07-0.96)	0.04281
Other	4/32	0.27 (0.07-1.07)	0.06201
Country	25/190	0.28 (0.10-0.77)	0.01391
Alone	7/20	Reference	

[1]Covariate Wald p-value;2Type 3 Wald p-value;

After the bivariate analysis, we used the factors identified as associated with scopophobia to build the multivariate model, both for the categorized PHQ variable and for its numerical form. It was found that after adjusting for income, number of inhabitants in the household and who these people were, both the categorized variable (p value = 0.04) and the continuous variable, which is presented in Figure 1, remained associated with scopophobia with statistical significance (Figure 1).

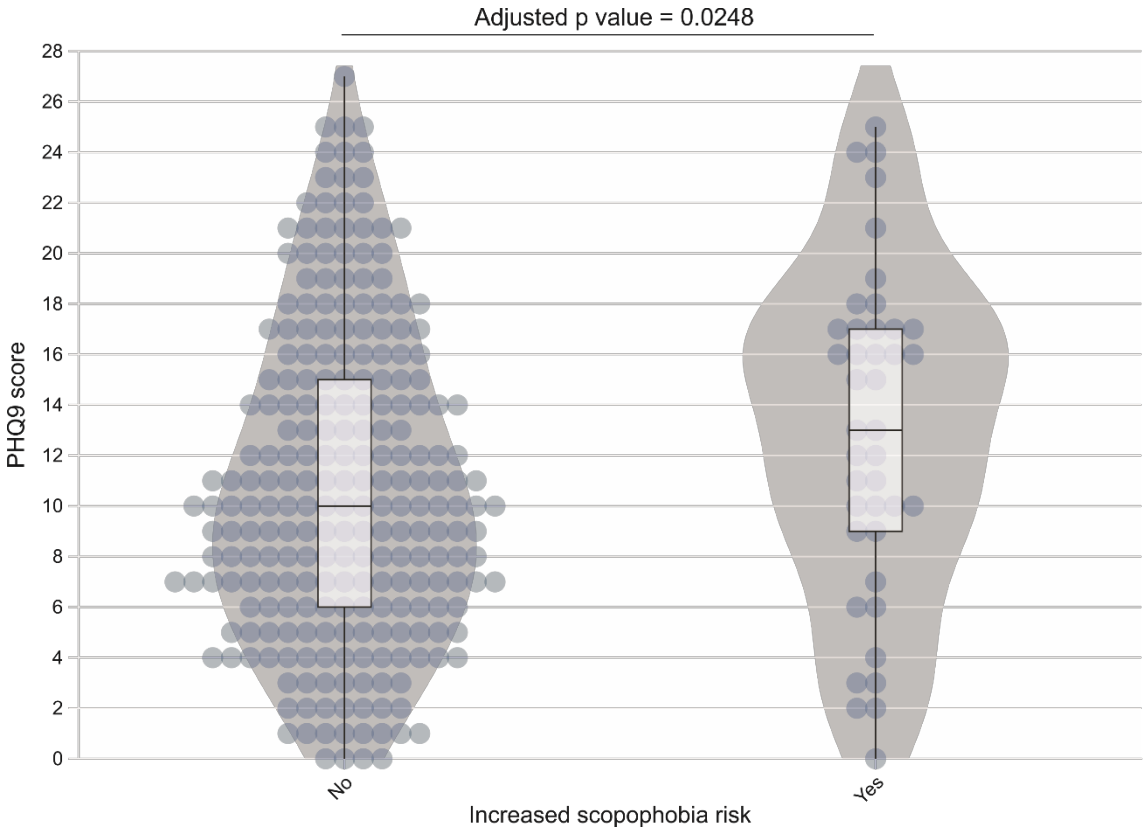

Figure 1. Violin graph of the distribution of the total score of the PHQ9 scale according to the presence of high risk of scopophobia.

DISCUSSION

In this study carried out during the period of social distancing due to the COVID-19 pandemic, it was observed that the prevalence of the high risk of scopophobia in medical students is high and is associated with a higher prevalence of students positively screened in PHQ9.

The overall prevalence of positive PHQ9 found in our study was higher than the rates found in other studies with medical students, estimated by a systematic review to be 28.0% (95% confidence interval [CI] 24.2–32.1%).[16]However, the diversity of methods used in similar studies makes it difficult to compare results. Among the methodological differences, the instruments used for diagnosis are particularly relevant, which are not always the same in the different studies. A study in Brazil, with students of occupational therapy, medicine and physiotherapy found a percentage of major depression of 10.5%, a more severe presentation of depression [21], and a study carried out only with medical students in Brazil reached a prevalence of 19.3%.[22] Our results probably reflect the effects of pandemics in the mental health of the students.

During the COVID19 pandemic, mental disorders in general, and depression in particular, had a large increase worldwide, affecting mainly the youngest, as seen in a study that evaluated young people from more than 60 countries.[23, 24]In particular, the pandemic has hit the mental health of health professionals hard, and among them are future doctors in training. A study carried out in New York, with the same scale used in the present study, identified high rates of depression among students in training, very close to the ones one identified in our study.[25]This effect is expected, considering that the students had to deal with the fear of infection and the patients' suffering.

In our study, a high score on the scopophobia scale was associated with higher prevalence of positive results on the PHQ9 scale. Fear of cameras, like all fears, can cumulatively lead to the development of psychiatric disorders such as depression. For example, it is well documented that fear of death in patients with cardiovascular disease, or fear of illness in newborn children, is associated with depression and postpartum depression, respectively.[26, 27]In addition to these, people who have suffered constant fear, such as asylum seekers, also have

higher rates of depression.[28]In addition to direct fear during exposure to cameras, the anxiety generated in the student by the negative experience and repeated exposures can also be one of the reasons for the presentation of depression. The two phenomena are commonly associated, and can lead to a potentiation of the other, with almost 50% of patients with depression also reporting anxiety.[29, 30]

Other factors were also identified in our study as associated with high scores on PHQ9. Women were twice as likely to have scopophobia compared to males, in agreement with other studies that show that women are about twice as likely as men to develop depression during their lifetime.[31]In medical students, this pattern has also been demonstrated in other studies.[32]Some of the proposed explanations are genetic characteristics and hormonal load, considering that adolescents and young women, such as those in our study, are more affected.[33]In addition to gender, we identified in our study that a lower family income is also associated with a higher prevalence of depression. Income is also a factor that several studies have reported as a determinant of the occurrence of depression, due to the deprivations and concerns generated by a lower income and the consequent anxiety that this state of need causes.[34]In addition to the direct effect on the individual, there are theories that report the importance of the "neighborhood" effect that would lead people with lower incomes to compare themselves with those with higher incomes and to suffer, which can be particularly important in the population of young adults. that we study.[35]

This study has some limitations. First, as this is a cross-sectional study, associations that are not causal or show reverse causality can be observed. However, it is important to note that the two conditions can feed back into each other. Second, we used scales that screens scopophobia and zoom fatigue but are not diagnostic of clinical disorders. Despite this, the validity of the PHQ scale has been demonstrated, having high sensitivity and specificity, we were very

conservative with the scopophobia scale and still found a high prevalence. Finally, the application of online questionnaires may have led to non-random selection.

Thus, considering that online learning may stay with us for years beyond the COVID-19 pandemic, it is important to know and provide instructions on how to reduce scopophobia and the associated video conferencing fatigue. The present study suggests that there is a high prevalence of depression in medical students the scopophobia in students exposed to remote learning increases the chances of depression among medical students, leading to the belief that interventions to mitigate this risk in students exposed to remote learning are opportune, especially in lower-income women.

DECLARATIONS

Ethics approval and consent to participate

Written informed consent was obtained from participants. The survey was approved by the Research Ethics Committee Research Ethics Committee of Unichristus in Brazil. All methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no conflict of interest.

Sources of Funding

None.

Authors' Contributions

Author's contributions were as follows: MSA, HALR, INV, BOAA, MK have made substantial contributions to conception and design. MSA, INV, HALR, MK revised the manuscript critically for relevant intellectual content. All authors approved the submission.

LIST OF ABBREVIATIONS

PBL - Problem-Based Learning

COMPETING INTERESTS

The authors declare that they have no conflict of interest.

Acknowledgement

NA.

REFERENCES

1. Wilder-Smith A, Freedman DO. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. Journal of travel medicine. 2020
two. Vercelli LdCA. Remote classes in times of covid-19: the perception of students of a professional master's program in education. Magazine @ environmenteducation. 2020;13(2):47-60.
3. Alsoufi A, Alsuyihili A, Msherghi A, Elhadi A, Atiyah H, Ashini A, et al. Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. PloS one. 2020;15(11):e0242905.
4. Castelli FR, Sarvary MA. Why students do not turn on their video cameras during online classes and an equitable and inclusive plan to encourage them to do so. Ecology and Evolution. 2021;11(8):3565-76.
5. de Oliveira Kubrusly Sobral JB, Lima DLF, Lima Rocha HA, de Brito ES, Duarte LHG, Bento LBBB, et al. Active methodologies association with online learning fatigue among medical students. BMC Medical Education. 2022;22(1):74.
6. Stoehr F, Müller L, Brady A, Trilla A, Mähringer-Kunz A, Hahn F, et al. How COVID-19 kick-started online learning in medical education—The DigiMed study. PloS one. 2021;16(9):e0257394.
7. Byrne L, Gavin B, Adamis D, Lim YX, McNicholas F. Levels of stress in medical students due to COVID-19. Journal of Medical Ethics. 2021;47(6):383.
8. Takac M, Collett J, Blom K, Conduit R, Rehm I, Foe A. Public speaking anxiety decreases within repeated virtual reality training sessions. PloS one. 2019;14:e0216288.
9. Costa K. Cameras Be Damned. (2020). Accessed May 2022.
10. Bailenson JN, McNamara DS: Nonverbal overload: a theoretical Argument for the causes of zoom fatigue. In., vol. two.*Technology, Mind, and Behavior*; 2021.
11. Molodynski A, Lewis T, Kadhum M, Farrell SM, Lemtiri Chelieh M, Falcão De Almeida T, et al. Cultural variations in wellbeing, burnout and substance use amongst medical students in twelve countries. International Review of Psychiatry. 2021;33(1-2):37-42.
12. Castaldelli-Maia JM, Lewis T, Marques dos Santos N, Picon F, Kadhum M, Farrell SM, et al. Stressors, psychological distress, and mental health problems amongst Brazilian medical students. International Review of Psychiatry. 2019;31(7-8):603-7.
13. Bhugra D, Sauerteig SO, Bland D, Lloyd-Kendall A, Wijesuriya J, Singh G, et al. A descriptive study of mental health and wellbeing of doctors and medical students in the UK. International Review of Psychiatry. 2019;31(7-8):563-8.
14. PH salmon. Psychiatric Illness in Medical Students. British Journal of Psychiatry. 1983;143(5):505-8.
15. Quek, Tam, Tran, Zhang, Ho. The Global Prevalence of Anxiety Among Medical Students: A Meta-Analysis. International Journal of Environmental Research and Public Health. 2019;16(15):2735.
16. Puthran R, Zhang MWB, Tam WW, Ho RC. Prevalence of depression amongst medical students: a meta-analysis. Medical Education. 2016;50(4):456-68.
17. Li Y, Wang A, Wu Y, Han N, Huang H. Impact of the COVID-19 Pandemic on the Mental Health of College Students: A Systematic Review and Meta-Analysis. Frontiers in psychology. 2021;12:669119-.
18. World Health O: Depression and other common mental disorders: global health estimates. In.: World Health Organization; 2017.
19. Association AP. Diagnostic and statistical manual of mental disorders, text revision (DSM-IV-TR®). 2010.
20. Santos IS, Tavares BF, Munhoz TN, Almeida LS, Silva NT, Tams BD, et al. [Sensitivity and specificity of the Patient Health Questionnaire-9 (PHQ-9) among adults from the general population]. Cad Health Publica. 2013;29(8):1533-43.

21. Cavestro JdM, Rocha FL. Prevalence of depression among college students. Brazilian Journal of Psychiatry. 2006;55:264-7.
22. Vasconcelos TCd, Dias BRT, Andrade LR, Melo GF, Barbosa L, Souza E. Prevalence of anxiety and depression symptoms among medicine students. Brazilian Journal of Medical Education. 2015;39:135-42.
23. Ettman CK, Abdalla SM, Cohen GH, Sampson L, Vivier PM, Galea S. Prevalence of Depression Symptoms in US Adults Before and During the COVID-19 Pandemic. JAMA Network Open. 2020;3(9):e2019686-e.
24. Varma P, Junge M, Meaklim H, Jackson ML. Younger people are more vulnerable to stress, anxiety and depression during COVID-19 pandemic: A global cross-sectionalsurvey. Progress in Neuro-Psychopharmacology and Biological Psychiatry. 2021;109:110236.
25. Gupta P, BKA, Ramakrishna K. Prevalence of Depression and Anxiety Among Medical Students and House Staff During the COVID-19 Health-Care Crisis. Academic Psychiatry. 2021;45(5):575-80.
26. Régis BN, Araújo RLR, de Souza VG, Neto NAS, Nodari NL, de Albuquerque Hayasida NM. Anxiety, depression and cardiovascular disease in young adults: a literature review. Health and Human Development. 2016;4(1):91-100.
27. David MAdO, Benute GRG, Fráguas Junior R, Nomura RY, Lucia MCSd, Zugaib M. Depression in hypertensive pregnant women: maternal concerns during pregnancy. Hospital Psychology. 2008;6(1):2-20.
28. Blackmore R, Boyle JA, Fazel M, Ranasinha S, Gray KM, Fitzgerald G, et al. The prevalence of mental illness in refugees and asylum seekers: A systematic review and meta-analysis. PLOS Medicine. 2020;17(9):e1003337.
29. Eysenck M, Payne S, Santos R. Anxiety and depression: Past, present, and future events. Cognition & Emotion. 2006;20(2):274-94.
30. Kalin NH: The critical relationship between anxiety and depression. In., vol. 177: Am Psychiatric Assoc; 2020: 365-7.
31. Kuehner C. Gender differences in unipolar depression: an update of epidemiological findings and possible explanations. Acta Psychiatrica Scandinavica. 2003;108(3):163-74.
32. Dahlin M, Joneborg N, Runeson B. Stress and depression among medical students: A cross-sectional study. Medical Education. 2005;39(6):594-604.
33. Kuehner C. Why is depression more common among women than among men? The Lancet Psychiatry. 2017;4(2):146-58.
34. Sareen J, Afifi TO, McMillan KA, Asmundson GJG. Relationship Between Household Income and Mental Disorders: Findings From a Population-Based Longitudinal Study. Archives of General Psychiatry. 2011;68(4):419-27.
35. Patel V, Burns JK, Dhingra M, Tarver L, Kohrt BA, Lund C. Income inequality and depression: a systematic review and meta-analysis of the association and a scoping review of mechanisms. World Psychiatry. 2018;17(1):76-89.

5 PRODUTO TÉCNICO PRINCIPAL

REFERÊNCIAS

AMARAL, Clarisse; ILHA, Júlia. **Fobia social no período pós-pandemia**. Universidade Federal de Santa Maria. 04/08/2022. Disponível em: https://www.ufsm.br/midias/experimental/revistatxt/2022/08/04/fobia-social-no-periodo-pos-pandemia%EF%BF%BC/#:~:text=De%20acordo%20com%20o%20%C3%BAltimo,no%20%E2%80%9Cp%C3%B3s%2Dpandemia%E2%80%9D.. Acesso em: 26 dez. 2022.

AMERICAN PSYCHIATRIC ASSOCIATION - APA. **Manual Diagnóstico e Estatístico de Transtornos Mentais**. DSM-IV-TR. 4. ed. Porto Alegre: Artmed, 2002.

ARRUDA, J. S.; SIQUEIRA, L. M. R. d. C. Metodologias Ativas, Ensino Híbrido e os Artefatos Digitais. Práticas Educativas, Memórias e Oralidades-Rev. **Pemo**, 3, n. 1, p. e314292-e314292, 2021.

ARUGA, M. **Factors Affecting Feelings of School Avoidance in Japanese High School Students**: A Longitudinal Study of 10th to 12th Graders. School Health, 16, 2020.

BÁRTOLO, A.; MONTEIRO, S.; PEREIRA, A. Factor structure and construct validity of the Generalized Anxiety Disorder 7-item (GAD-7) among Portuguese college students. **Cadernos de Saúde Pública**, v. 33, 2017.

BEATON, D. E.; BOMBARDIER, C.; GUILLEMIN, F.; FERRAZ, M. B. Guidelines for the process of cross-cultural adaptation of self-report measures. **Spine**, 25, n. 24, p. 3186-3191, 2000.

BUDIMAN, E. **Mobile Data Usage on Online Learning during COVID-19 Pandemic in Higher Education**, 2020.

CASTELLI, F. R.; SARVAY, M. A. **Why students do not turn on their video cameras during online classes and an equitable and inclusive plan to encourage them to do so**. Ecology and Evolution, 2021.

CHEEK, J. M.; BUSS, A. H. Shyness and sociability. **Journal of personality and social psychology**, v. 41, n. 2, p. 330, 1981.

CHURCHILL JR, G. A. A paradigm for developing better measures of marketing constructs. **Journal of marketing research**, 16, n. 1, p. 64-73, 1979.

CRIPPA, J. A. Does social phobia remain the ‘Ugly Duckling’ of anxiety disorders? **Rev Bras Psiquiatr** v. 31, p: 297-299, 2009.

DE OLIVEIRA, A. M.; DE OLIVEIRA, C. J. O ensino remoto durante a pandemia de COVID-19. *In*: **ANAIS do IX Simpósio de Pesq. e de Práticas Pedagógicas do UG**B 2021.

HUCKINS, J. F.; DASILVA, A. W.; WANG, W.; HEDLUND, E. et al. Mental Health and Behavior of College Students During the Early Phases of the COVID-19 Pandemic: Longitudinal Smartphone and Ecological Momentary Assessment Study. **J Med Internet Res**, v. 22, n. 6, p. e20185, 06 2020.

INGRAM, R. E.; RAMEL, W.; CHAVIRA, D.; SCHER, C. Social anxiety and depression. In R. W. CROZIER; L. E. ALDEN (Eds.), **The essential handbook of social anxiety for clinicians**. New York: John Wiley & Sons., 2005, 241-264.

ISER, B. P. M.; SLIVA, I.; RAYMUNDO, V. T.; POLETO, M. B. et al. Definição de caso suspeito da COVID-19: uma revisão narrativa dos sinais e sintomas mais frequentes entre os casos confirmados. **Epidemiologia e Serviços de Saúde**, v. 29, p. e2020233, 2020.

KESSLER, R. C.; DEMLER, O.; FRANK, R. G.; OLFSON, M.; PINCUS, H. A.; WALTERS, E. E.; et al. Prevalence and treatment of mental disorders, 1990 to 2003. **N Engl J Med** v. 352, p: 2515-23, 2005.

MARCOLINO, J. M; MATHIAS, L. A. S. T; FILHO, L. P; GUARATINI, A. A. Escala hospitalar de ansiedade e depressão: Estudo da validade de critério e da confiabilidade com pacientes no pré-operatório. **Revista Brasileira De Anestesiologia**. 2007. Disponível em: 57.10.1590/S0034-70942007000100006.

McNeil, D. W. Evolution of terminology and constructs in social anxiety and its disorders. In S. G. HOFMANN; P. M. DIBARTOLO. (Eds.). **Social anxiety**: Clinical, developmental, and social perspectives. 2. ed. London: Elselvier, 2010.

MOTTET, T. P. Interactive television instructors' perceptions of students' nonverbal responsiveness and their influence on distance teaching. **Communication Education**, 49, n. 2, p. 146-164, 2000/04/01 2000.

MULULO, S. C.; MENEZES, G. B.; FONTENELLE, L.; VERSIANI, M. Terapias cognitivocomportamentais, terapias cognitivas e técnicas comportamentais para o transtorno de ansiedade social. **Revista de Psiquiatria Clínica**, v. 36, n. 6, p: 221-228., 2008.

OGAWA, T.; BOUDERLIQUE, J. [Anthropophobia: psychopathological approach to the interactions between body, inter-subjectivity and language]. J**pn J Psychiatry Neurol**, v. 48, n. 3, p. 527-532, Sep 1994.

NASH, C. Report on digital literacy in academic meetings during the 2020 COVID-19 lockdown. **Challenges**, 11(2), 2020.

PEPER, E.; WILSON, V.;MARTIN, M.; ROSEGARD, E.; HARVEY, R. Avoid Zoom fatigue, be present and learn. **NeuroRegulation,** v. 8, n. 1, p: 47-47.2021

PFEFFERBAUM, B.; NORTH, C. S. Mental health and the Covid-19 pandemic. **New England Journal of Medicine**, v. 383, n. 6, p. 510-512, 2020.

PIERCE, M.; HOPE, H.; FORD, T.; HATCH, S. et al. Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. **Lancet Psychiatry**, 7, n. 10, p. 883-892, 10 2020.

PRADO, G.; TAVARES, M.; ARANTES, P. **Diálogos transdisciplinares**: arte e pesquisa. São Paulo: ECA/USP: 500 p. 2016.

SANTOS, I. S.; TAVARES, B. F.; MUNHOZ, T. N.; ALMEIDA, L. S. P. d. et al. Sensibilidade e especificidade do Patient Health Questionnaire-9 (PHQ-9) entre adultos da população geral. **Cadernos de Saúde Pública**, 29, p. 1533-1543, 2013.

SAILER, A.; HAZLETT-STEVEN, H. Social Anxiety in the College Student Population: The Role of Anxiety Sensitivity. *In*: B. AYRES; M. BRISTOW. (Eds.). **Anxiety in College Students**, New York: Nova, 2009.

TALBOTT, F. R. **Exploring the Relationship between Student Online Discussion-Board Activity and Student Grades**. (Doctoral dissertation, Lindenwood University), 2020.

VENDRAMINI, C. M. M.; SANTOS, A. A. A. d.; POLYDORO, S. A. J.; SBARDELINI, E. T. B. et al. Construção e validação de uma escala sobre avaliação da vida acadêmica (EAVA). **Estudos de Psicologia** (Natal), v. 9, n. 2, p. 259-268, 2004.

VERCELLI, L. d. C. A. Aulas remotas em tempos de covid-19: a percepção de discentes de um programa de mestrado profissional em educação**. Revista@ mbienteeducação**, v. 13, n. 2, p. 47-60, 2020.

WILDER-SMITH, A.; FREEDMAN, D. O. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. **J Travel Med**, v. 27, n. 2, 03 2020.

ZHAI, P.; DINGA, Y.; WUB, X.; LONGC, J. et al. The epidemiology, diagnosis and treatment of COVID-19. **International Journal of Antimicrobial Agents**, v. 55, n. 5, p. 105955, 2020.

APÊNDICES

APÊNCIDE A- Questionário

Escopofobia no contexto do ensino remoto: desenvolvimento de escala para rastreamento e fatores associados com risco aumentado

A escopofobia significa medo de ser observado e faz parte do grupo de distúrbios de antropofobia, estando associado com o uso de câmeras em aulas e reuniões.

Você provavelmente não levará mais de 10 minutos para respondê-lo.

Prezado participante,

Você está sendo convidado(a) a participar da pesquisa "ESCOPOFOBIA NO CONTEXTO DO ENSINO REMOTO: DESENVOLVIMENTO DE ESCALA PARA RASTREAMENTO E FATORES ASSOCIADOS COM RISCO AUMENTADO" desenvolvida por Hermano Alexandre Lima Rocha no Centro Universitário Unichristus.
O objetivo central do estudo é determinar a prevalência de risco aumentado de Escopofobia no Contexto do Ensino Remoto em estudantes dos cursos da saúde do Centro Universitário unichristus durante a vigência da pandemia de COVID19 e identificar fatores associados com maior risco.
Sua participação é voluntária, isto é, ela não é obrigatória, e você tem plena autonomia para decidir se quer ou não participar, bem como retirar sua participação a qualquer momento. Você não será penalizado de nenhuma maneira caso decida não consentir sua participação, ou desistir da mesma. Contudo, ela é muito importante para a execução da pesquisa.
Como em toda pesquisa realizada com seres humanos há algum tipo de risco, neste projeto há uma pequena chance de identificação indireta do participante da pesquisa. Dentre as medidas para minimizar esse risco, a adoção do questionário eletrônico, abrigado e gerido pela instituição responsável pelo estudo, que permite a codificação automática das respostas e gera automaticamente uma senha de acesso para o respondente. Com eles se pretende assegurar, tanto quanto possível, o anonimato das respostas, reduzindo-se ao mínimo o risco de identificação. Outra medida se dá pelo reduzido acesso ao conteúdo das respostas - questionários respondidos eletronicamente. Julga-se, assim, que a privacidade e o sigilo das informações serão resguardados e busca-se garantir que sejam utilizados em conformidade com os objetivos deste trabalho.
A qualquer momento, durante a pesquisa, ou posteriormente, você poderá solicitar do pesquisador informações sobre sua participação e/ou sobre a pesquisa, o que poderá ser feito através dos meios de contato explicitados neste Termo.
A sua participação consistirá em responder perguntas de um roteiro de questionário hospedado eletronicamente pela instituição responsável pela pesquisa que serão feitas agora. O tempo de duração para o preenchimento do questionário é de aproximadamente cinco minutos.
Conta com a anuência da diretoria da unidade, conforme "carta de anuência" emitida e encaminhada ao CEP.
Em caso de dúvida quanto à condução ética do estudo, entre em contato com o Comitê

de Ética em Pesquisa da Unichrsitus. O Comitê de Ética é a instância que tem por objetivo defender os interesses dos participantes da pesquisa em sua integridade e dignidade e para contribuir no desenvolvimento da pesquisa dentro de padrões éticos. Dessa forma o comitê tem o papel de avaliar e monitorar o andamento do projeto de modo que a pesquisa respeite os princípios éticos de proteção aos direitos humanos, da dignidade, da autonomia, da não maleficência, da confidencialidade e da privacidade.
Se desejar, este termo poderá ser enviado por email para você.
Esse pesquisa foi aprovada pelo CEP Unichristus sob número: 4.836.353.
Contatos:
O principal investigador é o Prof Dr Hermano Alexandre Lima Rocha. que pode ser encontrado em:
R. João Adolfo Gurgel, 133 - Cocó, Fortaleza - CE, 60190-180 Telefone: (85) 3265-8100
O CEP pode ser contactado em:
Telefone: (85)3265-6668
Fax: (85)3265-6668
E-mail: fc@fchristus.com.br

*Obrigatório

1. Após a leitura do TCLE, deseja e concorda em participar da pesquisa? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

Questionário preliminar

Por favor leia e responda com atenção.

2. Qual a sua idade? (somente números) *

3. Qual o seu semestre? (somente números) *

4. Você participou de aulas online no último semestre? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

5. Se sim, você ligava sua câmera durante as aulas online no último semestre? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

6. Se sim, você ligava só por obrigação ou você acha importante ligar a câmera durante aulas online? *

Marcar apenas uma oval.

- ◯ Por obrigação
- ◯ Acho importante

7. De 0 a 10, em que 0 é pouco e 10 é muito, quanto você acha importante ligar sua câmera durante aulas online? *

Marcar apenas uma oval.

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

8. De 0 a 10, em que 0 é pouco e 10 é muito, quanto você se sente confortável em ligar sua câmera durante aulas online? *

Marcar apenas uma oval.

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

A seguir apresentaremos algumas questões sobre o uso das câmeras durante aulas online. Por favor responda sobre suas impressões, opiniões e sentimentos sobre o último semestre (2021.1).

De 1 a 5, onde 1 é discordo totalmente e 5 é concordo totalmente, sinalize o quanto você concorda com as afirmações abaixo:

9. Com as câmeras ligadas eu tenho a ilusão de estar perto dos meus colegas e do professor, mas na realidade não tenho a mesma percepção que teria no ambiente presencial. *

Marcar apenas uma oval.

1
2
3
4
5

10. Câmera ligada me leva a sensação de estar mais exposto aos meus colegas de turma do que eu gostaria. *

Marcar apenas uma oval.

1
2
3
4
5

11. A câmera ligada me leva sensação de estar sendo vigiado e que todos estão olhando para mim. *

Marcar apenas uma oval.

1
2
3
4
5

12. Quando ligo a câmera e vejo meus colegas eu fico triste e sofro por lembrar que não posso estar com eles devido ao distanciamento social. *

Marcar apenas uma oval.

1
2
3
4
5

13. Eu acho que a aula é mais produtiva quando todos estão com câmera ligada. *

Marcar apenas uma oval.

1
2
3
4
5

14. Eu me concentro mais na aula quando estou com a câmera ligada. *

Marcar apenas uma oval.

1
2
3
4
5

Obrigado pela sua participação!

ANEXOS

ANEXO A - TERMO DE CONSENTIMENTO DE LIVRE ESCLARECIDO (TCLE)

Escopofobia no contexto do ensino remoto: desenvolvimento de escala para rastreamento e fatores associados com risco aumentado

A escopofobia significa medo de ser observado e faz parte do grupo de distúrbios de antropofobia, estando associado com o uso de câmeras em aulas e reuniões.

Você provavelmente não levará mais de 10 minutos para respondê-lo.

Prezado participante,

Você está sendo convidado(a) a participar da pesquisa "ESCOPOFOBIA NO CONTEXTO DO ENSINO REMOTO: DESENVOLVIMENTO DE ESCALA PARA RASTREAMENTO E FATORES ASSOCIADOS COM RISCO AUMENTADO" desenvolvida por Hermano Alexandre Lima Rocha no Centro Universitário Unichristus.
O objetivo central do estudo é determinar a prevalência de risco aumentado de Escopofobia no Contexto do Ensino Remoto em estudantes dos cursos da saúde do Centro Universitário unichristus durante a vigência da pandemia de COVID19 e identificar fatores associados com maior risco.
Sua participação é voluntária, isto é, ela não é obrigatória, e você tem plena autonomia para decidir se quer ou não participar, bem como retirar sua participação a qualquer momento. Você não será penalizado de nenhuma maneira caso decida não consentir sua participação, ou desistir da mesma. Contudo, ela é muito importante para a execução da pesquisa.
Como em toda pesquisa realizada com seres humanos há algum tipo de risco, neste projeto há uma pequena chance de identificação indireta do participante da pesquisa. Dentre as medidas para minimizar esse risco, a adoção do questionário eletrônico, abrigado e gerido pela instituição responsável pelo estudo, que permite a codificação automática das respostas e gera automaticamente uma senha de acesso para o respondente. Com eles se pretende assegurar, tanto quanto possível, o anonimato das respostas, reduzindo-se ao mínimo o risco de identificação. Outra medida se dá pelo reduzido acesso ao conteúdo das respostas - questionários respondidos eletronicamente. Julga-se, assim, que a privacidade e o sigilo das informações serão resguardados e busca-se garantir que sejam utilizados em conformidade com os objetivos deste trabalho.
A qualquer momento, durante a pesquisa, ou posteriormente, você poderá solicitar do pesquisador informações sobre sua participação e/ou sobre a pesquisa, o que poderá ser feito através dos meios de contato explicitados neste Termo.
A sua participação consistirá em responder perguntas de um roteiro de questionário hospedado eletronicamente pela instituição responsável pela pesquisa que serão feitas agora. O tempo de duração para o preenchimento do questionário é de aproximadamente cinco minutos.
Conta com a anuência da diretoria da unidade, conforme "carta de anuência" emitida e encaminhada ao CEP.
Em caso de dúvida quanto à condução ética do estudo, entre em contato com o Comitê

de Ética em Pesquisa da Unichrsitus. O Comitê de Ética é a instância que tem por objetivo defender os interesses dos participantes da pesquisa em sua integridade e dignidade e para contribuir no desenvolvimento da pesquisa dentro de padrões éticos. Dessa forma o comitê tem o papel de avaliar e monitorar o andamento do projeto de modo que a pesquisa respeite os princípios éticos de proteção aos direitos humanos, da dignidade, da autonomia, da não maleficência, da confidencialidade e da privacidade.
Se desejar, este termo poderá ser enviado por email para você.
Esse pesquisa foi aprovada pelo CEP Unichristus sob número: 4.836.353.
Contatos:
O principal investigador é o Prof Dr Hermano Alexandre Lima Rocha. que pode ser encontrado em:
R. João Adolfo Gurgel, 133 - Cocó, Fortaleza - CE, 60190-180 Telefone: (85) 3265-8100
O CEP pode ser contactado em:
Telefone: (85)3265-6668
Fax: (85)3265-6668
E-mail: fc@fchristus.com.br

*Obrigatório

1. Após a leitura do TCLE, deseja e concorda em participar da pesquisa? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

Questionário preliminar

Por favor leia e responda com atenção.

2. Qual a sua idade? (somente números) *

3. Qual o seu semestre? (somente números) *

ANEXO B- COMPROVANTE DE ENVIO DO ARTIGO CIENTÍFICO

Association of scopophobia with online learning fatigue among medical students in Brazil

Corresponding Author: Hermano Alexandre Lima Rocha

BMC Medical Education

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Editors invited *28 Jun 22*

Depression among medical students in Brazil exposed to remote learning and scopophobia

Corresponding Author: Hermano Alexandre Lima Rocha

BMC Medical Education

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Editors invited *02 Nov 22*

ANEXO D- PARECER DO COMITÊ DE ÉTICA

CENTRO UNIVERSITÁRIO
CHRISTUS - UNICHRISTUS

PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: ESCOPOFOBIA NO CONTEXTO DO ENSINO REMOTO: DESENVOLVIMENTO DE ESCALA PARA RASTREAMENTO E FATORES ASSOCIADOS COM RISCO AUMENTADO

Pesquisador: Hermano Alexandre Lima Rocha

Área Temática:

Versão: 1

CAAE: 47572821.4.0000.5049

Instituição Proponente: Instituto para o Desenvolvimento da Educação Ltda-IPADE/Faculdade

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 4.836.353

Apresentação do Projeto:

Durante a atual pandemia de COVID 19, diversos estressores, como prognósticos incertos e dificuldades financeiras, poderão contribuir para o
desequilíbrio emocional e a maior propensão a doenças psiquiátricas na população. No Reino Unido, um estudo comparou as mudanças na saúde
mental da população antes e depois da pandemia de COVID-19 e encontrou um aumento maior do que o esperado no sofrimento mental, sendo
mais evidente em jovens, mulheres e pessoas que viviam com crianças. A escopofobia significa temor de ser observado e está inclusa nos distúrbios
de antropofobia. A escopofobia está presente no meio acadêmico, visto que com a pandemia pelo COVID-19 e o consequente isolamento social, foi
necessária a introdução do ensino remoto, exigindo que as câmeras fossem ligadas pelos alunos e professores em certos momentos. Neste estudo,
pretendemos determinar a prevalência de risco aumentado de Escopofobia no Contexto do Ensino Remoto em estudantes dos cursos da saúde do
Centro Universitário unichristus durante a vigência da pandemia de COVID19 e identificar fatores associados com maior risco. Será realizado de
validação de instrumento e um estudo transversal quantitativo. O estudo transversal será em um

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segundo momento, em que o instrumento validado
será aplicado em um estudo transversal, quantitativo, analítico, para os desfechos analisados. O estudo será realizado na cidade de Fortaleza – CE
nas Instituições de Ensino Superior que possuem cursos na área de saúde. O período do estudo será de setembro de 2021 a junho de 2022. Serão
incluídos todos os discentes com idade superior a 18 anos, de ambos os sexos, que estejam vinculados às instituições de ensino superior dos
cursos da área da saúde da Unichristus. Serão excluídos os discentes com idade inferior a 18 anos e aqueles que não desejem participar do estudo,
que não consigam responder às perguntas do instrumento de coleta, que não estejam vinculados a alguma instituição de ensino superior do curso
da área da saúde ou que não fizeram uso de plataformas virtuais durante a pandemia.

Objetivo da Pesquisa:

Objetivo Primário:

Determinar a prevalência de risco aumentado de Escopofobia no Contexto do Ensino Remoto em estudantes dos cursos da saúde do Centro
Universitário unichristus durante a vigência da pandemia de COVID19 e identificar fatores associados com maior risco.

Objetivo Secundário:

Desenvolver escala no estilo questionário com itens em formato Likert para mensurar o risco de Escopofobia no Contexto do Ensino Remoto;•

Validar a escala no estilo questionário com itens em formato Likert para mensurar o risco de Escopofobia no Contexto do Ensino Remoto;•

Explorar a prevalência do risco aumentado de Escopofobia no Contexto do Ensino Remoto;• Identificar os fatores associados com risco
aumentado Escopofobia no Contexto do Ensino Remoto.

Avaliação dos Riscos e Benefícios:

Riscos:

A presente pesquisa apresenta um risco mínimo aos envolvidos visto que não existe nenhum procedimento invasivo. Caso ocorra algum
constrangimento ao responder o questionário as medidas cabíveis serão rapidamente tomadas. Será ressaltado ao participante que sua identidade

será preservada e que em caso de qualquer dúvida quanto a sua participação na pesquisa, os pesquisadores estarão disponíveis para responder
quaisquer questionamentos de forma imediata.
Benefícios:
Os participantes do estudo serão beneficiados com informações sobre prevenção de estresse, ansiedade e fadiga.

Comentários e Considerações sobre a Pesquisa:
Pesquisa relevante para o campo da Saúde Coletiva. O objetivo da pesquisa está bem descrito e os objetivos são claros e pertinentes. Metodologia detalhada sobre o procedimento de coleta de dados. Aspectos éticos informados e de acordo com a Resolução 466/12.

Considerações sobre os Termos de apresentação obrigatória:
Os Termos de apresentação obrigatória foram apresentados e estão de acordo com a Resolução 466/12 do Conselho Nacional de Saúde (CNS).

Recomendações:
Enviar Relatório Parcial e Final via Plataforma Brasil.

Conclusões ou Pendências e Lista de Inadequações:
A pesquisa não apresenta pendências éticas ou documentais.

Considerações Finais a critério do CEP:

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1745188.pdf	01/05/2021 09:14:35		Aceito
Folha de Rosto	folhaderostoass.pdf	01/05/2021 09:14:14	Hermano Alexandre Lima Rocha	Aceito
Orçamento	ORCAMENTO.pdf	29/04/2021 14:38:37	Hermano Alexandre Lima Rocha	Aceito
Projeto Detalhado / Brochura Investigador	curriculo.pdf	29/04/2021 14:38:28	Hermano Alexandre Lima Rocha	Aceito
Declaração de concordância	concordancia.pdf	29/04/2021 14:38:06	Hermano Alexandre Lima Rocha	Aceito
TCLE / Termos de Assentimento / Justificativa de	tcleeletronico.pdf	29/04/2021 14:37:45	Hermano Alexandre Lima Rocha	Aceito

Ausência	tcleeletronico.pdf	29/04/2021 14:37:45	Hermano Alexandre Lima Rocha	Aceito
Brochura Pesquisa	projeto.pdf	29/04/2021 14:37:35	Hermano Alexandre Lima Rocha	Aceito

Situação do Parecer:
Aprovado

Necessita Apreciação da CONEP:
Não

FORTALEZA, 08 de Julho de 2021

Assinado por:
OLGA VALE OLIVEIRA MACHADO
(Coordenador(a))