



# Online harassment during COVID-19: a cross-sectional analysis across 10 countries from the I-SHARE consortium

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## Abstract

**Aim** This study, wave 2 of the International Sexual Health and Reproductive Health (I-SHARE) study, aims to explore the prevalence and correlates of online harassment in 10 countries including low- and middle-income countries.

**Subject and methods** Data were collected through the I-SHARE-2 survey from March 2021 to July 2022, in 10 countries ( $N=2860$ ) during the COVID-19 pandemic.

**Results** Overall, 30% of participants reported that they believed online harassment was happening more frequently than before COVID-19; 20% of participants reported having received unsolicited advances, 17% reported having received unsolicited obscene images or videos, and 7% reported that someone had shared a photo or video of them doing something humiliating or embarrassing without permission. This perceived increase in online harassment during the pandemic was potentially due to more online behavior amid lockdowns. A mixed-effects logistic regression revealed that people identifying as gender/sexual minority, people with worse economic situations, and people living in a country with lower gender inequality had higher odds of experiencing online harassment.

**Conclusion** These results align with prior research, emphasizing the vulnerability of minorities to online harassment. Our study findings have implications for the development of interventions to decrease online harassment.

**Keywords** Online harassment · Sexual harassment · Risk factor · Sexual minority · Gender minority

## Introduction

Online harassment, or cyberbullying, involves the use of computers or the internet to inflict, facilitate, or threaten violence against people that results in, or is likely to result in, physical harm, sexual harm, psychological harm, or economic suffering. It may also include exploiting the person's circumstances, traits, or vulnerabilities (Council of Europe Cybercrime Convention Committee 2018). Sexual violence can occur in person, online, or via technology, as in the case of posting or sharing sexual pictures of someone without their consent, or nonconsensual sexting (Centers for Disease Control and Prevention—CDC 2019). More specifically, according to the Project deSHAME team (2017), online

sexual harassment may be described as unwanted sexual conduct on any digital platform, and has been categorized into four main types: nonconsensual sharing of intimate images and videos; exploitation, coercion, and humiliation; sexualized bullying; and unwanted sexualization. Other definitions refer to any unwanted conduct with the aim of intimidating or humiliating an individual, such as nonconsensual sexting, and can be executed in two forms: sending unsolicited sexts and unwanted requests for sexts (Copp et al. 2021). Online environments facilitate aggressive behavior because they suggest a (often false) sense of anonymity and privacy (Gámez-Guadix et al. 2015). However, online harassment has been independently linked to offline (face-to-face) harassment, with those who indicate harassment in one domain being more likely to experience harassment in the other (Ojanen et al. 2015; Zetterström Dahlqvist and Gillander Gådin 2018).

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A systematic review by Stevens et al. (2021) highlighted the harmful effects of online harassment on the mental health of its victims, including anxiety, depression, panic attacks, and suicidal thoughts. Other studies report additional consequences on mental health such as aggressive behavior, substance use (Copp et al. 2021), heartache, shame, humiliation, and marginalization (Albikawi 2023). Victimization by sexual harassment has been linked to risky behaviors such as increased cigarette and alcohol use as maladaptive coping strategies (Livingston et al. 2022). Similar negative consequences of online harassment were found during the pandemic (António et al. 2024). These consequences were more pronounced in marginalized groups, such as girls and women (Chiodo et al. 2009; Copp et al. 2021). For instance, online sexual harassment significantly increased anxiety and depression in adolescent females but not in males (Ståhl and Denhag 2021). In particular, women of color are at greater risk of offline sexual harassment than white women (Raj et al. 2021).

### Online harassment in the context of the COVID-19 pandemic

The COVID-19 pandemic has brought new dynamics to the problem of harassment (online and offline), and online harassment seems to have increased, although the pattern is not entirely clear as some countries found increases whereas other did not (Bacher-Hicks et al. 2022; Sorrentino et al. 2023). For example, in Nairobi, Kenya, sexual harassment of adolescent girls and young women was already common before COVID-19. More specifically, sexual harassment during COVID-19 has been associated with a decrease in COVID-19 restrictions, likely due to the ability to leave the house freely (Bevilacqua et al. 2022). Furthermore, an online survey conducted in Egypt demonstrated that more than half of Egyptian women experienced a form of technology-facilitated sexual violence during the COVID-19 lockdown. Harassment was more prevalent among divorced working women during the pandemic (Zaghloul et al. 2022). An online survey of 2515 participants in Spain examining offline and online sexual harassment demonstrated that online sexual harassment was higher during the lockdown period (32.6%) as compared with before (16.5%) and after (17.8%) this period (Casanovas et al. 2022). The same study also found a higher prevalence of (offline) sexual harassment in women versus men, among LGBTQ+ versus heterosexual participants, and among younger (18–24 years) versus older (30–35 years) individuals during the pandemic. The authors suggested that sexual harassment transferred from public settings to social networks during the COVID-19 lockdown (Casanovas et al. 2022). Additionally, online sexual harassment of women might be provoked by the sexualization of female characters in online environments such as video

games (e.g., *Ultra Street Fighter IV*; Burnay et al. 2019). This might be a contributing factor to increased online sexual harassment during the COVID-19 pandemic, which was also associated with increased gaming (Haug et al. 2022).

### Correlates of online harassment

This study examines the relationship between sociodemographic variables and online harassment across a diverse range of countries, focusing on factors including age, gender and sexual orientation, education, economic situation, Gender Inequality Index (GII), and country gross domestic product (GDP), which will be briefly reviewed next. A systematic review by Jenaro and colleagues (2018) found that most studies focus on young adults (18–29 years old), and only a few have included individuals older than 65 years. Indeed, in a study that addressed sexual harassment in a sample of individuals aged 12–24 years old, being comparatively older was positively correlated with both offline and online sexual harassment (Duncan et al. 2019). A prevalence study of sexual harassment before, during, and after the COVID-19 lockdown found that the prevalence in the 18–24-year age group was twice as high as in the group aged 30–35 years (Casanovas et al. 2022). Young adults, particularly Generation Z who grew up with the internet as a part of daily life, are especially vulnerable to online harassment, as they are more comfortable using technology, have a greater online presence, and use social media platforms or other online forums for social interactions. At the same time, one of the main developmental tasks during this period is experiencing intimacy and seeking their first intimate relationships (Schaie 2003), making them potential targets for perpetrators.

Concerning gender and sexual orientation, Mitchell and colleagues (2014) found that lesbian/queer girls, bisexual girls, and gay/queer boys (13–18 years old) reported the highest prevalence of online sexual harassment, while heterosexual boys reported the lowest. Similar findings were observed by Douglass and colleagues (2018) among young Australians. More recently, in a scoping review about dating apps as a platform for sexual harassment, Gewirtz-Meydan and colleagues (2024) identified women and sexual minorities as particularly vulnerable. However, the authors stressed the low number of studies examining sexual minorities. Homophobia and transphobia may be transferred from the real world to the digital context. Moreover, individuals from sexual and gender minorities may use online platforms for socializing and dating more frequently. Because they disclose personal information regarding their sexual and gender identity, they likely become more vulnerable to perpetrators.

Despite many studies regarding harassment having been conducted on university campuses (Dey 2023; Klein and

Martin 2021; Uhlich et al. 2024), education seems to be a less studied variable as a risk factor for online harassment. For instance, Casanovas and colleagues (2022) compared those who completed secondary education with those having higher education and found no difference for sexual harassment before, during, or after the lockdown period. Huiskes and colleagues (2022) found a similar pattern in a sample of 289 adults (age range: 18–56 years old) when assessing technology-facilitated sexual violence victimization during the COVID-19 pandemic among Dutch and Portuguese individuals. Moreover, in a systematic review of online harassments in adults, education was not identified as a potential risk factor, despite an increase in the use of online learning environments (Jenaro et al. 2018).

Lastly, individual economic circumstances might also play a role in online harassment. In our study, we assessed both the economic situation and the country's GDP. According to the literature, there seem to be differences—for instance, among those with paid and non-paid work—on the prevalence of sexual harassment before the lockdown period (i.e., those with paid work reported higher harassment rates) but not during or after the lockdown period (Casanovas et al. 2022). Moreover, Taylor et al. (2021) did not find any effect of family income on sexual harassment experiences. However, no previous study addressed the country's GDP. Furthermore, according to a scoping review by Gewirtz-Meydan and colleagues (2024), studies about sexual harassment on dating apps have only been conducted in the Western world (i.e., USA, Canada, Australia, Netherlands, China, UK), lacking more diverse studies including low- and middle-income countries.

## The current study

To the best of our knowledge, most previous studies assessed offline harassment during the COVID-19 pandemic, focusing on healthcare providers (Iida et al. 2022; McCall et al. 2023) or limited to single (Bevilacqua et al. 2022; Casanovas et al. 2022) or double country settings (Huiskes et al. 2022). Furthermore, the studies that have examined online harassment during COVID-19 show different effects (Sorrentino et al. 2023; Vaillancourt et al. 2023), with some studies indicating higher prevalence of online harassment (e.g., António et al. 2024; Kee et al. 2022) and others indicating a lower prevalence (Bacher-Hicks et al. 2022). Moreover, until now, the bulk of studies on this subject have centered on teenagers and young adults, restricting their scope to a specific range of sociodemographic factors. This approach overlooks additional potential predictors that are crucial for pinpointing the most at-risk groups and, as a result, for developing efficient prevention strategies. Therefore, the current study was conducted to identify important predictors of online

harassment during COVID-19 through a multi-country study including 10 countries involved in the International Sexual Health and Reproductive Health (I-SHARE) survey. This study was developed to address two aims: first, to identify the prevalence of online harassment during COVID-19 across countries; second, to identify crucial sociodemographic correlates of online harassment during the COVID-19 pandemic. Based on the reviewed literature, we hypothesized that younger participants, marginalized individuals, individuals with worse economic situations, and those with lower levels of education are particularly at risk for online harassment, as well as participants from countries with a lower GDP and a higher GII.

## Method

### Procedure

This study is based on the second wave of the International Sexual Health and Reproductive Health (I-SHARE) survey. The I-SHARE consortium was established to better understand sexual and reproductive health during the COVID-19 pandemic (Michielsen et al. 2021). The initial round of data collection covered the period from July 20, 2020, to February 15, 2021 (for findings from wave 1, see Campbell et al. 2023; Erausquin et al. 2022; Hensel et al. 2023). The I-SHARE-2 survey includes data collected between March 14, 2021, and July 13, 2022, examining how sexual health outcomes changed over the course of the pandemic. The I-SHARE-2 survey content was kept as close as possible to that of I-SHARE-1. Minor adjustments were made to questions to reflect the new period of time, and a few questionnaires and topics were added, such as online harassment (for more details see Michielsen et al. 2021). Because online harassment was only included in the second wave, findings reported here are based solely on the I-SHARE-2 survey. Not all the countries that participated in wave 1 participated again in wave 2; additionally, a few countries that had not participated in the previous survey joined wave 2.

We adopted items focused on online harassment that have been used before to examine these behaviors in surveys, and the items demonstrated acceptable internal consistency and convergent validity (Betts and Spenser 2017). Within each country, the members of the in-country team translated the survey into local languages (when required). The team also conducted field testing of the survey instrument. This involved administering the questionnaire to at least 10 individuals who provided feedback about translation and sensitive topics. The in-country team obtained ethical approval from local institutional review committees. Some countries organized a second round of field testing using the online version of the survey questionnaire. More details regarding

the methods of the initial I-SHARE survey are described in the survey protocol (Michielsen et al. 2021). The survey took approximately 15–20 min to complete. Open Data Kit software (version 1.16) was used to collect data from participants on a cell phone, laptop, or other electronic device. At the end of the survey, participants in each country were provided sexual and reproductive health resources.

Eligibility criteria for participation were as follows: individuals who were at least 18 years old, residing in the country where the survey was conducted, and able to provide online informed consent. Instructions in the online survey informed participants that they could choose to stop at any point and leave any item unanswered. In-country leads made final decisions about data-sharing and data management practices. A data-sharing agreement was signed by the principal investigators of each participating country, and this agreement covered multi-country analyses. We obtained ethical approval from Ghent University (BC-07988) and the University of North Carolina at Chapel Hill (295,989) for multi-country analyses based on de-identified data. The survey questionnaire included topics such as sociodemographic characteristics, sexual relationships, compliance with COVID-19 restrictions (e.g., social distancing), online harassment, intimate partner violence, and HIV/sexually transmitted disease (STD) testing. The complete survey instrument is published in the protocol paper (Michielsen et al. 2021).

## Participants

The total sample comprised  $N=2860$  participants from 10 countries (Armenia, Canada, Egypt, Germany, Moldova, Nigeria, Portugal, Singapore, Spain, USA), and depending on the items, we had between 4–9% missing values. The majority of participants identified as female (62%), heterosexual (71%), and having at least some college/university education or a college/university degree (73%). The average age was 31.8 years ( $SD=11.9$ , range = 18–80 years), and 85% of participants reported that their economic situation got worse during the pandemic (see Table 1). The average GII across all 10 countries was 0.26 ( $SD=0.20$ ; min = 0.04, max = 0.68); six of the 10 countries were categorized as high-income countries and the remaining ones as upper-middle-income or lower-middle income countries. The average country GDP was US \$13,664.58 ( $SD=13,664.16$ ; min = 2065.70, max = 72,794.00, see Table 2).

## Instruments

Four survey items focusing on online harassment represent the main dependent variables in the analyses reported here (see Figs. 1 and 2 for more details). Items were adapted from Betts and Spenser (2017). These included receiving

**Table 1** Summary of demographic characteristics

		No.	Percent
Sex	Woman	1760	62%
	Man	1088	38%
	Other sex	12	0.4%
Gender	Woman	1697	59%
	Man	1043	37%
	Both	44	2%
	Neither	19	0.7%
	Other gender	17	0.6%
Sexual orientation	Asexual	112	4%
	Bisexual	162	6%
	Gay	59	2%
	Heterosexual	1314	46%
	Lesbian	31	1%
	Queer	38	1%
	Pansexual	19	0.7%
	Questioning/unsure	95	3%
	Other sexual orientation	28	1%
Economic situation	Worse	1155	40%
	Same	1403	49%
	Better	211	7%
Education	No formal education	21	0.7%
	Some/completed primary school	108	4%
	Some/completed secondary school	497	17%
	Some/completed college	2033	71%
	Other education	134	5%

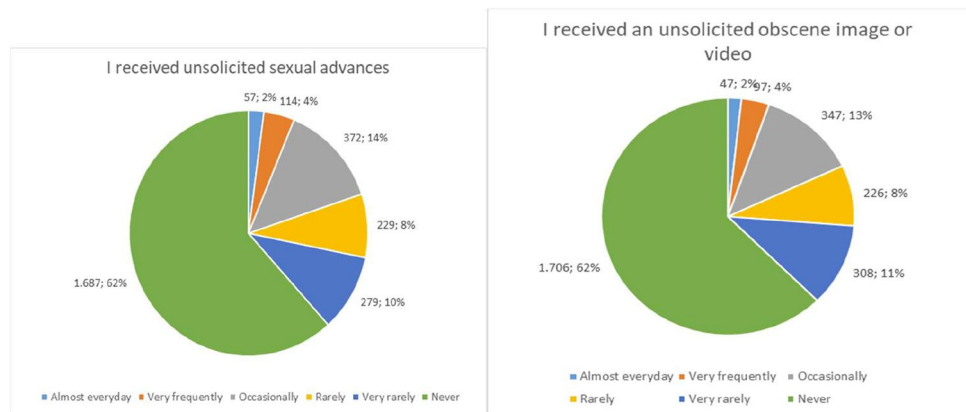
Note: Some percentages do not add up to 100% due to missing values

**Table 2** Summary of country-level variables

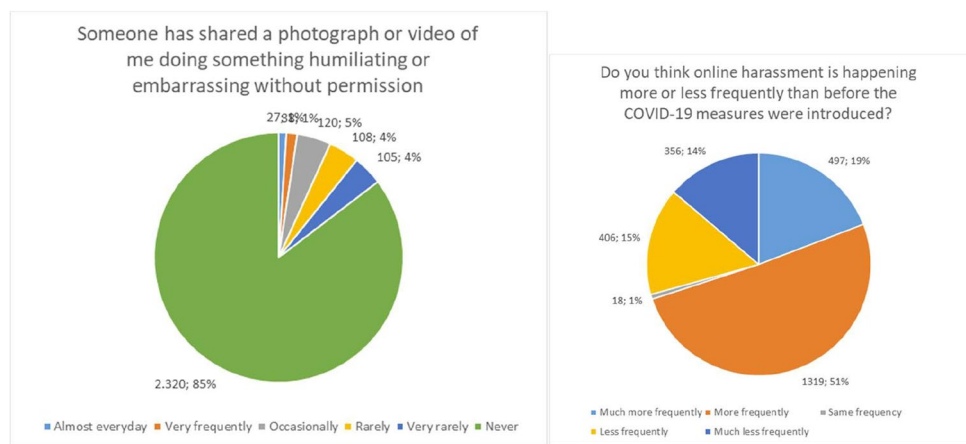
Country	No.	Country GDP	Country income	GII
Armenia	296	4966.50	LMIC	0.216
Canada	2	51,987.90	HIC	0.069
Egypt	889	3698.80	LMIC	0.443
Germany	138	51,203.60	HIC	0.073
Moldova	311	5230.70	LMIC	0.205
Nigeria	205	2065.70	LMIC	0.680
Portugal	951	24,567.50	HIC	0.067
Singapore	13	72,794.00	HIC	0.040
Spain	54	30,103.50	HIC	0.057
USA	1	70,248.60	HIC	0.179

unsolicited online sexual advances, receiving obscene online images or videos, and someone sharing an online photo or video of the participant doing something embarrassing. Participants could respond with “almost every day,” “very frequently,” “occasionally,” “rarely,” “very rarely,” or

**Fig. 1** Pie chart depicting the percentages for the original categories of the outcome variables “having received unsolicited sexual advances” and “having received unsolicited images”



**Fig. 2** Pie chart depicting the percentages for the original categories of the outcome variables “someone having shared an embarrassing photo” and “perceiving online harassment to happen more or less frequently since COVID-19”



“never” to the above questions. In addition, we asked participants about whether online harassment was happening more or less frequently since COVID-19. This item was rated on a six-point Likert scale ranging from “much more frequently” to “much less frequently.” Given the small number of respondents reporting online harassment in this sample, we created a binary variable for each of the four online harassment variables, which was coded yes or no reflecting whether a participant experienced some degree of online harassment or not at all.

**Individual-level predictors** Individual-level predictors were sociodemographic characteristics including age, sex assigned at birth, gender identity, sexual orientation, level of education, and perceived changes to one’s economic situation as a result of COVID-19. These survey items were based on a World Health Organization (WHO) sexual and reproductive health survey (Kpokiri et al. 2022). Only 2.3% of the sample identified as nonbinary, which prevented the separate inclusion of all gender identities due to insufficient model stability. To reflect the full diversity of our sample and include all gender minorities, for this analysis we created a variable that indicated whether a participant belonged to a sexual or gender minority. For this purpose, sexual

orientation, sex, and gender were combined and transformed into one binary variable for model stability. This variable had four levels: “cis women heterosexual,” “cis men heterosexual,” “sexual and/or gender minority,” and “another gender identity or sexual orientation.” The last category includes all participants that had a missing value on gender or sexual orientation. Age was grand-mean-centered, and education was measured on five levels from “no formal education” to “some or completed college,” with “other education” as an additional category. Perceived changes to one’s economic situation was measured with a binary variable indicating whether the economic situation got worse or better.

**Country-level predictors** Country-level predictors included country GDP per capita according to the World Bank (2021). Additionally, we computed a categorical variable called “country income” which stratified countries by geography based on the World Bank categories: low and lower-middle-income countries (LMICs), upper-middle-income countries (UMICs), and high-income countries (HICs; New World Bank 2022). This variable was coded as binary, with LMICs and UMICs representing one category and HICs representing the other category. The GII in 2021 was also used as a measure of country-level gender inequality. The value of GII

ranges between 0 and 1, with 0 being 0% inequality, indicating that women do equally well relative to men, and 1 being 100% inequality, indicating that women do poorly relative to men (Human Development Report 2021).

## Data analysis

First, the self-reported proportion of participants experiencing online harassment was examined (see Figs. 1 and 2). To account for the nested data (participants from the 10 countries included in this study) and due to the binary outcome in our analysis, we conducted a mixed-effects logistic regression model. The model was subsequently run using a random intercept and individual variables as level-1 predictors and country-level variables as level-2 predictors. SPSS 28 software (IBM Corp., Armonk, NY, USA) was used for statistical analyses.

## Results

Of all participants ( $N=2860$ ), 20% ( $N=543$ ) reported having received unsolicited advances, 17% ( $N=491$ ) reported having received unsolicited obscene images or videos, 7% ( $N=185$ ) reported that someone shared a photo or video

of them doing something humiliating or embarrassing without their permission, and 30% ( $N=762$ ) reported that they believed online harassment was happening more frequently than before COVID-19 restrictions were introduced (see Figs. 1 and 2 for more details).

**Receiving unsolicited sexual advances online** Of the total sample ( $N_{\text{total}}=2860$ ),  $N=2738$  participants responded to this item. The analysis regarding demographic correlates of experiencing online harassment revealed that participants belonging to the “another gender identity or sexual orientation” category regarding gender and sexual orientation had significantly lower odds (odds ratio [OR]=0.46, 95% CI=0.30, 0.70) and participants who identified as sexual and/or gender minority had significantly higher odds (OR=1.79, 95% CI=1.22, 2.62) of having received unsolicited sexual advances online. Participants with a lower level of education, that is, those who had some or completed primary school (OR=0.36, 95% CI=0.11, 1.22) and those who had some or completed secondary school (OR=0.33, 95% CI=0.11, 1.00), were significantly less likely to have received unsolicited sexual advances online. Finally, participants in countries with a higher GII had significantly higher odds (OR=3.15, 95% CI=1.02, 9.71) of having received unsolicited sexual advances online (as shown in Table 3).

**Table 3** Mixed-effects logistic regression predicting online harassment during the COVID-19 pandemic

Level-1 predictors	Received unsolicited sexual advances		Received obscene images or videos		Someone shared a photo or video of me doing something embarrassing		Online harassment happens more or less frequently since COVID-19	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age (centered)	0.99	0.98, 1.0	1.00	0.99, 1.02	1.00	0.97, 1.02	0.99	0.98, 1.00
Sexual and gender minority (Ref: cis women heterosexual)								
Cis men heterosexual	1.09	0.71, 1.69	1.19	0.76, 1.86	1.50	0.70, 3.22	0.83	0.51, 1.34
Sexual and/or gender minority	<b>1.79*</b>	1.22, 2.62	<b>1.55*</b>	1.03, 2.34	<b>2.69**</b>	1.28, 5.69	<b>0.59*</b>	0.38, 0.93
Another sexual or gender identity	<b>0.46***</b>	0.30, 0.70	<b>0.42***</b>	0.27, 0.66	0.48	0.23, 1.01	<b>0.37***</b>	0.25, 0.57
Education (Ref: No formal education)								
Some/completed primary school	<b>0.36**</b>	0.11, 1.22	0.45	0.14, 1.48	0.30	0.08, 1.10	1.08	0.34, 3.48
Some/completed secondary school	<b>0.33*</b>	0.11, 1.00	0.46	0.15, 1.39	<b>0.28*</b>	0.08, 0.92	1.28	0.43, 3.81
Some/completed college	0.28	0.10, 0.84	<b>0.29*</b>	0.10, 0.85	<b>0.25*</b>	0.08, 0.82	2.21	0.76, 6.44
Other	0.13	0.03, 0.50	<b>0.22*</b>	0.06, 0.80	<b>0.19*</b>	0.04, 0.89	1.15	0.35, 3.83
Economic situation (Ref: got worse)								
Got better	1.06	0.73, 1.53	0.73	0.49, 1.11	0.97	0.53, 1.77	<b>0.66*</b>	0.46, 0.96
Level-2 predictors								
GI	<b>3.15*</b>	1.02, 9.71	4.15	0.36, 48.42	0.00	0.00, 0.00	<b>4.13*</b>	1.21, 14.17
Country GDP	1.00	1.00, 1.00	1.00	1.00, 1.00	1.00	0.99, 1.01	1.00	1.00, 1.00
Country income (Ref: LMIC)								
High-income country	0.90	0.44, 1.85	0.69	0.13, 3.76	4.250E+13	0.00, 1.368E+210	<b>17.76***</b>	5.87, 53.72

Note.  $N=2860$ , \* $p<.05$ , \*\* $p<.01$ , \*\*\* $p<.001$

**Receiving obscene images or videos** Of the total sample size ( $N_{\text{total}} = 2860$ )  $N = 2731$  participants responded to this item. Participants who had “another gender identity or sexual orientation” had significantly lower odds ( $OR = 0.42$ , 95%  $CI = 0.27, 0.66$ ) of having received obscene images or videos, whereas participants who identified as sexual and/or gender minority had significantly higher odds ( $OR = 1.55$ , 95%  $CI = 1.03, 2.34$ ). Participants with a higher level of education ( $OR = 0.29$ , 95%  $CI = 0.10, 0.85$ ) and those who belonged to the “other education” category ( $OR = 0.22$ , 95%  $CI = 0.06, 0.80$ ) were significantly less likely to have received obscene images or videos (as shown in Table 3).

**Sharing embarrassing photos or videos** Of the total sample size ( $N_{\text{total}} = 2860$ ),  $N = 2718$  participants responded to this item. Participants who identified as a sexual and/or gender minority had significantly higher odds ( $OR = 2.69$ , 95%  $CI = 1.28, 5.69$ ) of reporting that someone shared a photo or video of them doing something embarrassing without their permission. Participants who had some or completed secondary school ( $OR = 0.28$ , 95%  $CI = 0.08, 0.92$ ), those who had some or completed college ( $OR = 0.25$ , 95%  $CI = 0.08, 0.82$ ), and those belonging to the “other education” category ( $OR = 0.19$ , 95%  $CI = 0.04, 0.89$ ) had lower odds of reporting that someone shared a photo or video of them doing something embarrassing without their permission (as shown in Table 3).

**Perception of frequency of online harassment** Of the total sample ( $N_{\text{total}} = 2860$ )  $N = 2596$  participants responded to this item. Participants belonging to “another gender identity or sexual orientation” category ( $OR = 0.37$ , 95%  $CI = 0.25, 0.57$ ) and participants who identified as a sexual and/or gender minority ( $OR = 0.59$ , 95%  $CI = 0.38, 0.93$ ) had significantly lower odds of reporting that online harassment was happening more frequently than before COVID-19 restrictions were introduced. Participants who reported that their economic situation worsened due to COVID-19 had higher odds ( $OR$  economic situation got better =  $0.66$ , 95%  $CI = 0.46, 0.96$ ) of reporting that online harassment was happening more frequently than before COVID-19 restrictions were introduced. Participants in countries with a higher GII had significantly higher odds ( $OR = 4.13$ , 95%  $CI = 1.21, 14.17$ ) of reporting that online harassment was happening more frequently than before COVID-19 restrictions were introduced. Participants in higher-income countries ( $OR = 17.76$ , 95%  $CI = 5.87, 53.72$ ) had higher odds of reporting online harassment as happening more frequently than before COVID-19 restrictions were introduced. Country GDP was not predictive for any of the outcome variables (see Table 3 for details).

## Discussion

The goal of this study was twofold: first, to estimate the prevalence of online harassment during COVID-19 in a multi-country sample including HICs as well as UMICs and LMICs, and second, to examine both demographic and country-level predictors to identify individuals that are particularly vulnerable to online harassment, especially in a context of increased online interaction. Overall, we discovered important patterns of online harassment and found that participants who reported less education, belonged to a sexual or gender minority, and were from countries with more gender inequality were at greater risk of experiencing online harassment. The last of these is in line with another study examining offline harassment among young Spaniards during the COVID-19 pandemic, which found that women and sexual minorities were more likely to have experienced offline sexual harassment (Casanovas et al. 2022). According to this study, a possible reason for these results is the prevailing culture of patriarchy which seeks to repress women and marginalized individuals, leaving them vulnerable because of a lack of physical and economic strength. For instance, those lacking financial resources might use less secure platforms or be unaware of privacy settings that could protect them from harassment or help in seeking justice against harassment. Although this explanation might be specific to offline harassment and not generalizable to online harassment, it could be one explanation why individuals from countries with more gender inequality are more likely to experience online harassment, since these two forms of harassment are correlated (Ojanen et al. 2015; Zetterström Dahlqvist & Gillander Gådin 2018). Furthermore, 38% of participants in our study reported experiencing sexual harassment during the pandemic, which is in line with another study that found a similar rate of 35.7% during COVID-19 (Casanovas et al. 2022). This suggests that in both studies, a significant number of participants reported that they experienced online harassment more frequently during the pandemic. In some cases, especially among younger people, online harassment can fuel cycles of revenge, which likely exacerbates this problematic phenomenon (Jenaro et al. 2018). This has been corroborated by other studies that found an increase in online harassment (Kee et al. 2022), especially towards marginalized individuals such as women (Peterman et al. 2020). Although lockdown situations might seem to be a time when perpetrators—for instance, those engaging in stalking behavior—are less likely to approach the victim, the opposite might be true. Technologies such as Facebook or apps like Houseparty might have made it easier for stalkers to manipulate, humiliate, threaten, and isolate their victims, which has potentially contributed to

the spread of online harassment behavior as suggested by a qualitative study (Bracewell et al. 2022). A plausible reason for the increase in online harassment is the lockdown restrictions, which prevented physical interaction and promoted more e-interaction; i.e., a rise in the use of different electronic communication apps like Snapchat, Zoom, and others, might have contributed to the reported increase (Alsawalqa 2021). Thus, these results highlight a serious problem that has likely grown due to the pandemic which forced us to rely more heavily on online communication.

The analysis revealed distinct patterns of vulnerability among different demographic groups. Our study highlighted that sexual and gender minorities were particularly at risk of experiencing online harassment. Specifically, our data showed that people identifying as a gender or sexual minority had higher odds of experiencing all forms of online harassment assessed in this study, which is in line with other studies examining rates of harassment during the pandemic (e.g., Vaillancourt et al. 2023). Marginalized individuals often use online platforms to find community and express their identities. However, this visibility may make them targets for harassment by those who oppose or seek to oppress their identities. This is in line with other studies examining different indicators of violence during the pandemic: a multi-country study on intimate partner violence in 13 countries by the Global Drug Survey found that nonbinary people were more likely to experience violence and harassment than other participants (Gilchrist et al. 2023), while the study on Spanish youth also found that sexual minorities were at greater risk of experiencing offline harassment (Casanovas et al. 2022).

Conversely, individuals with higher levels of education appeared less likely to encounter certain forms of online harassment, suggesting a potential protective effect of educational attainment against receiving obscene images or videos. However, for receiving unsolicited sexual advances online, the pattern was reversed, and participants with a lower level of education were significantly less likely to have experienced that. This might be because individuals with lower levels of education may have less access to digital devices and the internet or may use them differently. Their online presence might be less frequent or concentrated on different platforms compared to individuals with higher education levels, potentially reducing their exposure to situations where unsolicited advances are more likely. Furthermore, education level often correlates with socioeconomic status (Sirin 2005), which can affect the types of online interactions and the perceived targets of unsolicited advances. Those with higher education and, potentially, higher socioeconomic status might be perceived as more attractive targets specifically for this form of online harassment.

The study also shed light on broader societal structures in relation to individual experiences of online harassment. Participants from countries with a higher GII reported more frequent encounters with online harassment, as did those whose economic situations had worsened during the pandemic. This points to the intersection of online harassment with systemic inequalities, underscoring the complex web of factors that contribute to the phenomenon. It also reflects how societal structures and individual circumstances shape digital experiences. In societies where gender inequality is pronounced, norms and attitudes that devalue and discriminate against women and gender minorities can spill over into digital spaces. This inequality may not only perpetuate tolerance for aggressive behaviors online but also target individuals based on their gender identity or expression. The digital realm potentially becomes another platform for exerting control and perpetuating gendered violence, making those from less equitable societies particularly vulnerable. Furthermore, countries with higher gender inequality often lack robust legal frameworks to protect against (online) harassment (United Nations 2006). Even when laws exist, enforcement may be weak, and victims may not trust the legal system due to experiences of discrimination (United Nations 2006). The absence of protection leaves individuals more exposed to online harassment. Similarly, economic downturns, especially those exacerbated by events like the COVID-19 pandemic, can increase online harassment in several ways. Financial stress can lead to more time spent online seeking opportunities, increasing exposure to potential harassers. Economic vulnerability can also make individuals targets for scams, exploitation, or coercion, with harassers preying on their financial desperation. Finally, systematic inequalities often result in a digital divide (Aissaoui 2022), where marginalized communities have limited access to technology and the internet. When these individuals do engage online, their lack of digital literacy (Cullen 2003) or unawareness of privacy settings can make them easy targets for harassment. Moreover, the digital divide also means they might have fewer resources to seek help or support when faced with online harassment.

To summarize, these findings enrich our understanding of online harassment dynamics, particularly in the context of global crises that force societal shifts towards virtual interactions. They underscore the importance of considering societal and economic disparities in research and theories of online harassment.

### Practical implications and interventions

This study calls for urgent actions from digital platforms, policymakers, and educational institutions to address and mitigate online harassment. Strategies could include



enhancing digital safety measures, implementing stricter harassment policies, and promoting digital literacy programs focused on fostering respectful online interactions. These measures are critical in protecting vulnerable populations and ensuring a safer online environment for all users.

## Limitations

The current study has several limitations, notwithstanding the measures employed to reduce bias, including online panels, collaborations with organizations for sample recruitment, reviews of analytics, and predetermined analytical plans, despite the lack of guidelines for conducting online surveys (Hlatshwako et al. 2021). First, the results regarding online harassment might be affected by social desirability, recall, or self-report bias. Participants who have experienced online harassment may have been hesitant to complete the survey due to concerns about privacy and safety. This may have led to underreporting of the incidence and severity of online harassment (Althubaiti 2016). Second, the survey was anonymous and cross-sectional, which only provides a snapshot of online harassment during the COVID-19 pandemic and precludes the establishment of causal relationships or the assessment of changes in online harassment over time. Moreover, the study does not compare online harassment experiences during the COVID-19 pandemic with pre-pandemic periods. This limits the ability to assess whether the observed online harassment patterns are specific to the pandemic context or part of broader trends. Future research should consider longer time frames to capture potential temporal variations. Third, the study focuses on 10 countries within the I-SHARE consortium, and although it includes a diverse range of countries, it may not be representative of online harassment experiences in other regions or cultural contexts. For instance, what is considered harassment in one culture may not be viewed as such in another due to cultural norms, social attitudes towards online behavior, and legal systems, which may influence the extent to which online harassment is experienced and reported. The pandemic has had differential impacts on different nations and cultures. For example, in countries that experienced prolonged lockdowns or social distancing measures, individuals may have spent more time online, potentially increasing the likelihood of experiencing online harassment. Fourth, the majority of the sample were women. This could lead to an overestimation of the prevalence of certain types of online harassment and an underestimation of others. Finally, it should be taken into account that the study primarily focuses on online harassment, and understanding the interconnectedness of offline and online harassment could provide a more comprehensive understanding of the phenomenon, which should be taken into account in future research.

## Conclusion

In conclusion, this study highlights the urgency of addressing online harassment, a societal ill magnified by the COVID-19 pandemic. Society's collective efforts are essential to combating online harassment and protecting those most at risk. This need is underlined by the findings of this study, which has several strengths: First, it examines a large, culturally diverse sample ( $N = 2860$ ) across 10 countries including high-income as well as lower- and middle-income countries. The multi-country data allowed us to examine both individual-level and country-level variables. Our findings contribute to the understanding of crucial predictors for online harassment during the COVID-19 pandemic. Identification of vulnerable groups such as sexual and gender minorities provides insights for potential targeted interventions. This has important implications for policies aiming to reduce online harassment. The findings advocate for a societal, technological, and governmental commitment to fostering a digital landscape where respect and safety are paramount, especially for marginalized and vulnerable groups. Future research should examine longitudinal data and the interconnectedness of offline and online harassment.

**Data availability** Data and materials are available on request.

## Declarations

**Ethical statement** This study was approved by the institutional review boards of Ghent University (BC-07988) and the University of North Carolina at Chapel Hill (295989). All participants were older than 18 years and provided informed consent before starting the survey.

**Conflict of interest** We have no conflict of interest to disclose.

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