

Digital Closeness, Real Dangers: Predictors of Online Sexual Behaviors, Solicitations, and Harassment Among Adolescents in Nigeria

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Abstract

The rapid advancement of digital technologies has profoundly transformed societal interactions, particularly among adolescents, whose daily lives and social engagements are increasingly mediated by digital platforms. However, this digital intimacy exposes adolescents to numerous risks. While much of the existing research on adolescents' online behaviors and associated threats has focused on Western contexts, limited attention has been given to non-Western settings. This study addresses this gap by examining the online interactions and experiences of adolescents in Nigeria, with particular attention to their sexual behaviors and encounters with sexual solicitation and harassment. Survey data were collected from adolescents in eight secondary schools across two local government areas in a North Central state of Nigeria. Findings reveal that a substantial proportion of adolescents engage in sexual conversations with Internet-only contacts and share nude images. Factors such as gender, phone calls, face-to-face meetings, experiences of blackmail, and the frequency of parent-child discussions significantly predicted the likelihood of engaging in sexual conversations or sending nude pictures. Additionally, age, experiences of cyberbullying and harassment, and blackmail emerged as significant predictors of sexual solicitation and harassment. These findings underscore the urgent need for interventions that integrate sexual-risk digital citizenship education, promote parent-adolescent communication, and leverage technological tools to detect grooming behaviors and facilitate the reporting of online exploitation.

CCS Concepts

• Security and privacy → Social aspects of security and privacy.

Keywords

Adolescent, Sexual behaviors, Sexual solicitation, Sexual harassment, Internet



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1 Introduction

The swift progression of digital technologies has significantly reshaped societal interaction [37]. The internet now serves a multitude of purposes, including education and social engagement [32]. Adolescence today is deeply intertwined with the advancement of digital technology, which significantly shapes their daily lives [33–35]. The widespread adoption of digital platforms in adolescents' lives has positively impacted their social interactions, including enhanced connectivity, learning, and self-expression [6].

Nonetheless, this digital closeness comes with numerous threats to adolescents, especially in matters regarding online sexual activities [14, 24]. Research has established a clear link between online activity and risky sexual behaviors among adolescents. This includes searching online for someone to talk with about sex, sexting, cybersex, and the exchange of intimate or sexually suggestive content with individuals met online [7, 12, 39, 42]. Various factors influence adolescents' engagement in these activities. Adolescents who do not discuss online risky behaviors with parents are more likely to sext and receive explicit content [39]. Other predictors include poor parental monitoring, perceived peer norms, perceived vulnerability, perceived peer involvement, perceived risk [7, 8, 12]. Gender patterns also shape how adolescents engage in risky online sexual activities. In a Taiwanese survey, boys were more likely to send sexts, whereas girls were more likely to receive them [43]. Predictors differ as well: one study showed that boys' risk is driven mainly by general high-risk behavior, whereas girls' risk is additionally linked to younger age, low body-esteem, and involvement in delinquent activities [36].

Beyond the risks inherent in adolescents' online sexual activities, their digital interactions also expose them to various cyber threats, including sex-related ones such as sexual grooming, sexual predation, unsolicited sexual solicitations, and harassment [9, 22, 27, 40].

A meta-analysis by Madigan et al. [22] estimates that approximately one in nine adolescents has experienced online sexual solicitation. Compared to general risks such as misinformation, more direct threats, such as sexual harassment, are especially severe as they are targeted at specific individuals and can have immediate psychological impacts [20]. Evidence suggests that girls are more likely to report experiences of online sexual solicitation or harassment [11, 17, 20]. Gendered patterns of Internet use further shape exposure to risk: while boys are more likely to engage intensively with online gaming, girls typically spend more time engaging in social networking and interpersonal communication activities that have been linked to increased exposure to sexual harassment and potential encounters with sexual predators [2]. De Santisteban & Gámez-Guadix [11] found that girls who frequently use video chats and instant messaging are more likely to receive sexual solicitations and interactions from adults. Other socio-demographic risk factors, including adolescents' age, parental unemployment, and single-parent households, are linked to higher incidences of reported sexual harassment. Conversely, strong parental involvement has shown a protective effect, reducing adolescents' vulnerability to such experience [17].

Research evidence demonstrates that adolescents who engage in risky online sexual interactions and are exposed to sexual solicitations or harassment experience serious psychological, emotional, and privacy concerns [31]. Such events can greatly impact their mental health, self-esteem, relationships with others, and development [10, 45]. Although a large body of research within the HCI area has focused on adolescents' online activities and the associated threats, the vast majority of this work has been conducted in the Western world [21]. Hence, the current knowledge is insufficient regarding how these threats are realized in non-Western societies, particularly in the African context, where the digital practices might have distinct characteristics relative to cultural, family, and community contexts [28, 44].

Our study focuses on adolescents in Nigeria and their online sexual experiences. The choice of Nigeria is predicated on several factors. First, concerns about online threats vary across regions, reflecting differences in socio-cultural and technological landscapes [9]. Second, Nigeria ranks eighth worldwide and first in Africa in Internet penetration and digital media uptake, with young people accounting for over 60% of its online population [3, 30]. Third, reports reveal that 49% of Nigerian adolescents access the Internet at school and home [4]. This widespread digital technology adoption has significantly increased the vulnerability of children to online sexual risks [1]. According to a report by DQ Institute, as cited in [3], over half (54%) of Nigerian adolescents aged 13 – 18 are exposed to online risks, including sexual content, chatting with strangers, sexting, and grooming.

Existing literature on Nigerian adolescents' sexual interactions, e.g., [16, 19, 26, 29], concentrates on offline behaviors, leaving the digital realm under-examined. The studies that do address online sexual activity report predictors such as peer alienation, prior offline sexual experience, and pubertal status [41]. Other factors, including widespread poverty, entrenched patriarchal norms, and parents' limited digital literacy, further heighten adolescents' vulnerability to online sexual risks [1]. The current study further explores adolescents' online interactions and experiences in Nigeria with a focus

on their sexual behaviors and experiences of sexual solicitation and harassment. Specifically, we seek to answer the following research questions:

- (1) What risky online activities do adolescents engage in?
- (2) What is the prevalence of online risks experienced among adolescents?
- (3) What are the predictors of adolescents' online sexual behaviors?
- (4) What factors contribute to adolescents' risk of experiencing online sexual solicitation and harassment?

This study advances the literature in several respects. First, it broadens inquiry into adolescents' online sexual interactions and experiences by considering intensive digital interactions (e.g., speaking on the phone to someone only met online), their offline escalation (e.g., face-to-face meetings), and related forms of online victimization (e.g., blackmail experience) as predictive factors. Second, by examining adolescents in Nigeria, a lower-middle-income setting that remains under-represented in the literature, this study deepens our understanding of online sexual behavior, solicitation, and harassment within a distinct national and regional context. Its findings enrich HCI scholarship and create a foundation for designing culturally and contextually sensitive interventions aimed at safeguarding adolescents and fostering healthier online environments worldwide.

2 Research Methods

2.1 Participants and Procedures

The present study was part of a larger study on child online safety in Nigeria, focused on identifying online risks faced by children in the country, investigating their ability to effectively protect themselves online, and empowering them on responsible and safe online behaviors. Eight secondary schools in two local governments in one of Nigeria's North Central region states were invited to participate in a survey. Ethical approval to conduct the study was obtained, and each school used its selection process to choose students for participation. In one school, the survey was administered alongside a cybersecurity awareness campaign. We opted for a paper-based format because Internet access at the schools was either unavailable or limited (a common situation in the country). In addition, the schools required students to complete the surveys on-site, which made an online survey unfeasible.

A total of 273 senior secondary (SS) 1–3 students were recruited and participated in our larger survey. Of the 273 distributed, 256 surveys were returned. For the present study, we only included responses from participants who answered the questions on online activities, online risks experienced, and online sexual behaviors. At the end, 21 responses were deemed invalid because participants exceeded the age limit of 19 years¹ or submitted incomplete responses.

The final sample consisted of 235 adolescents with an average age of 16 years ($SD = 1.48$; range = 12 – 19 years). Participants identified as 128 male (54.5%) and 107 female (45.5%). Their grade levels were 34 in SS1 (14.5%), 92 in SS2 (39.1%), and 109 in SS3 (46.4%).

¹According to the World Health Organization (WHO), adolescents are those who fall between 10 and 19 years of age: <https://www.who.int/southeastasia/health-topics/adolescent-health>

Most reported going online several times a day (40.9%), indicated having no parental/guardian rules about their Internet use (34.5%), and reported they sometimes discuss their online activities with a parent or guardian (43.0%). Table 1 provides further participants details.

2.2 Measures

The first part of the survey for the present study consisted of general questions, including participants' age, sex, grade level, frequency of online use, and medium of online access. Participants were also asked about whether their parents or guardians have rules about their Internet use with four response options: "No," "Yes, my parents/guardians restrict my access to certain sites," "Yes, my parents/guardians restrict my time spent on the Internet," and "Yes, my parents/guardians restrict my access to certain sites and time spent on the Internet." Further, participants answered a question on how much they talked about what they did online with their parent or guardian with the following response options: "Never," "Rarely," "Sometimes," "Often," and "Always."

Adolescents risky online activities were measured with 5 questions (Figure 1 and Table 2), e.g., "How many times have you added someone you have never met face-to-face to your social media friends list," "How many times have you chatted or spoken on phone about sex with someone you met online," and "How many times have you sent your nude pictures to someone you have met only online." Participants indicated the number of times they engaged in each of the activities, selecting one of the response categories: "Never," "Once," "2-5 times," "6-10 times," and "More than 10 times."

To assess adolescents' experience to online risks, participants were shown a list of 19 online risks and asked to indicate which ones they had encountered. However, for the present study, we only focus on 8 of the risks (Table 3), e.g., "Cyberbullying and harassment," "Sexual solicitation and harassment," and "Pornographic/sexual content." For many of the listed risks, we also supplied a brief definition to clarify their meaning for participants. For instance, blackmail was defined as "Someone circulating/threatening to circulate my private information or nude pictures."

2.3 Data Analysis

Data analyses were performed using R. We first generated descriptive statistics, including frequencies, means, and standard deviations, for the demographic variables. For the five online-activity and eight online-risk items, we summarized category frequencies and tested gender differences with chi-square analyses. Finally, we modeled predictors of engaging in online sexual behaviors and experiencing sexual solicitation or harassment online using binary logistic regression.

To examine factors that influence engaging in online sexual activities, we considered two modes of digitally mediated interpersonal sexual interaction: via text- or audio-based and picture-based communication [13]. These were measured using two dependent variables: "Chatted or spoken on phone about sex with someone you met online" and "Sent your nude pictures to someone you have met only online." Each item was recoded as "0 = No ('Never' selected)" and "1 = Yes (any response other than 'Never' selected)." To identify the factors that predict adolescents' exposure to sexual

solicitation or harassment online, we likewise constructed a binary dependent variable, "Experienced Sexual solicitation or harassment," coded "0 = No (risk not selected among the list of 8 online risks)" and "1 = Yes (risk selected)."

For the predictor variables, age was entered as a continuous numeric predictor. Gender was coded "0 = Male" and "1 = Female." Grade level was recoded using two dummy variables, SS2 and SS3. Each was coded "0 = No" and "1 = Yes," with SS1 serving as the reference category. For frequency of online use, using "Less often" as the reference group, we created 5 dummy variables: "Once a week," "Several times a week," "About once a day," "Several times a day," and "Almost constantly." Each was coded "0 = No" and "1 = Yes." Parental/guardian's rule about online use was recoded as "0 = No (selected 'No') and "1 = Yes (selected any of the 3 'yes' options)." Frequency of talk with parents/guardians about online activities was dummy coded where "0 = No" and "1 = Yes," with "Never" as the reference category. Each of the online risks was coded "0 = No (risk not selected)" and "1 = Yes (risk selected)." For risky online activities, each variable was recoded as "0 = No ('Never' selected)" and "1 = Yes (any response other than 'Never' selected)".

3 Results

3.1 Participants' risky online activities

We first answer the question of the risky online activities participants engage in. The findings are depicted in Figure 1 and Table 2. The majority of respondents engaged in extending their online social networks, with 87.2% adding someone they had never met in person to their social-media friends list. They were also involved in offline extensions of online contacts: 62.6% reported speaking on the phone with someone known only online, and 53.2% ultimately meeting an online contact face-to-face. Regarding sexual interactions, nearly one in five participants (19.1%) reported chatting or speaking on phone about sex with someone they met online, and 15.3% acknowledged sending nude images to an online contact.

We found gender differences in participants' online behaviors: the behaviors were more common among male participants compared to females. Specifically, 72.7% of male respondents, compared with 50.5% of females, reported speaking on the phone with someone they had met only online ($\chi^2(2) = 11.321, p = .001$). Likewise, 21.1% of males versus 8.4% of females acknowledged sending nude images to an online contact ($\chi^2(2) = 6.282, p = .012$).

3.2 Online risks experience

Participants reported a variety of online risks (Table 3). The most common was exposure to pornographic or sexual content (33.2%), followed by identity theft (21.3%) and sexual solicitation or harassment (20.4%). Other risks included cyberbullying and harassment (18.7%), phishing attacks (11.5%), blackmail (10.2%), posting regrets (7.2%), and social engineering tactics (6.4%). There were no significant gender differences in overall risk exposure among participants.

3.3 Factors influencing online sexual behaviors

Here, we present our findings on the predictors of online sexual behaviors among participants. Tables 4 and 5 show the factors that influence chatting or speaking on the phone with an online contact and sending nude pictures to someone met online, respectively.

Table 1: Other participants' characteristics

	n (%)
Frequency of online use	
Less often	29 (12.3)
Once a week	27 (11.5)
Several times a week	29 (12.3)
About once a day	27 (11.5)
Several times a day	96 (40.9)
Almost constantly	27 (11.5)
Owner(s) of device(s) used for online access	
Personal	184 (78.3)
Parent's or guardian's	108 (46.0)
Other relatives'	18 (7.7)
Friends'	29 (12.3)
Others'	32 (13.6)
Parental/guardian rules about online use	
No	81 (34.5)
Yes, restrict my access to certain sites	56 (23.8)
Yes, restrict my time spent on the Internet	69 (29.4)
Yes, restrict my access and time	29 (12.3)
Talk with parent/guardian about online activities	
Never	36 (15.3)
Rarely	39 (16.6)
Sometimes	101 (43.0)
Often	28 (11.9)
Always	31 (13.2)

Table 2: Risky online activities among participants

	Total n (%)	Female n (%)	Male n (%)	χ^2
Added someone never met face-to-face to SM friends list	205 (87.2)	92 (86.0)	113 (88.3)	0.11, $p = .742$
Spoke on the phone to someone only met online	147 (62.6)	54 (50.5)	93 (72.7)	11.32, $p = .001$
Met face-to-face with someone only met online	125 (53.2)	49 (45.8)	76 (59.4)	3.79, $p = .052$
Chatted or spoke on phone about sex with someone met online	45 (19.1)	15 (14.0)	30 (23.4)	2.76, $p = .097$
Sent nude pictures to someone only met online	36 (15.3)	9 (8.4)	27 (21.1)	6.28, $p = .012$

Table 3: Risks participants encountered online

	Total n (%)	Female n (%)	Male n (%)	χ^2
Cyberbullying and harassment	44 (18.7)	18 (16.8)	26 (20.3)	0.27, $p = .609$
Sexual solicitation and harassment	48 (20.4)	21 (19.6)	27 (21.1)	0.01, $p = .908$
Phishing emails	27 (11.5)	11 (10.3)	16 (12.5)	0.11, $p = .744$
Identity theft	50 (21.3)	22 (20.6)	28 (21.9)	0.01, $p = .932$
Pornographic/sexual content	78 (33.2)	29 (27.1)	49 (38.3)	2.80, $p = .094$
Social engineering	15 (6.4)	8 (7.5)	7 (5.5)	0.13, $p = .720$
Posting regret	17 (7.2)	5 (4.7)	12 (9.4)	1.28, $p = .257$
Blackmail	24 (10.2)	9 (8.4)	15 (11.7)	0.38, $p = .537$

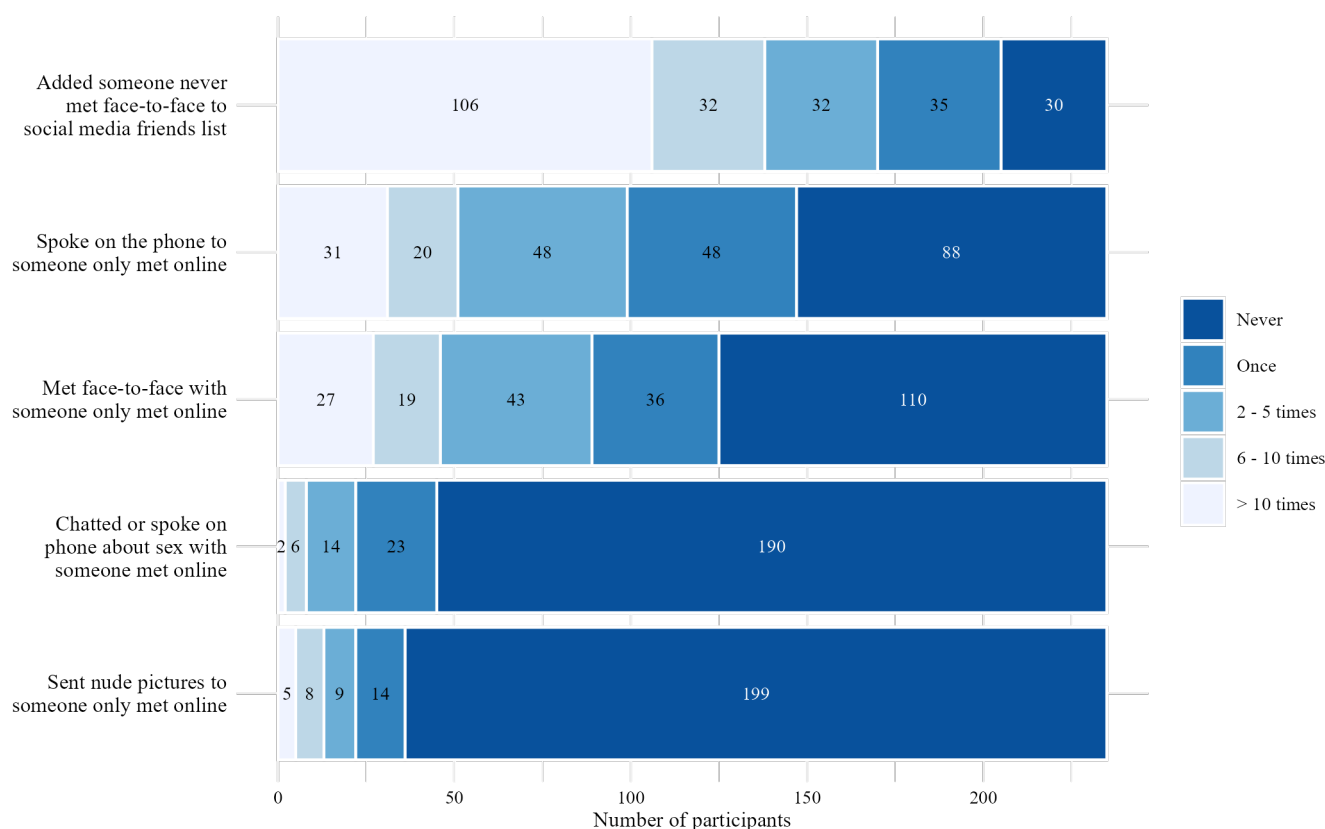


Figure 1: Number of times participants engaged in risky online activities

The set of predictors in the model accounts for approximately 41.1% of the variation in the log-odds of engaging in sexual conversation with an online contact. As shown in Table 4, our model shows that the strongest predictor of having sexual conversation with an online contact is intensive online use. Participants who are always online have about seven times higher odds of reporting a sexual conversation than those who reported being online less often. Having sent a nude image to an online contact was associated with 5.7 times greater odds of engaging in a sexual conversation with someone met online. Participants who have talked on the phone with an online-only contact are about 3.7 times more likely to have had a sexual conversation than those who have not. Meeting an online contact in person raises the odds of a sexual conversation by roughly the same factor (approximately 3.7). Experiencing blackmail is linked to a threefold increase in the odds of sexual conversation.

The model on sending nude pictures accounted for 34.5% of the variation in the log-odds of the outcome. As seen in Table 5, participants who have already engaged in a sexual conversation with an online contact are nearly nine times ($OR = 8.8, p < .001$) more likely to have sent a nude picture. Meeting an online contact in person triples the odds of having sent a nude image. Females are about 61% less likely than males to have sent a nude image.

Discussing online activities with parents or guardians was associated with a roughly 72% reduction in the odds of sending a nude picture. Adding someone never met face-to-face to a friends list is associated with approximately 69% lower odds of sending a nude. Surprisingly, participants who report seeing online pornography are about 65% less likely to have sent a nude image.

3.4 Factors influencing experience of online sexual solicitation and harassment

Our model (Table 6) shows that age and having experienced cyberbullying/harassment and blackmail predict participants' experience of sexual solicitation and harassment online. The model explains 20.9% of the variation in the log-odds of the outcome. Participants who have experienced blackmail show over five-fold higher odds of being subjected to sexual solicitation/harassment compared to those who have not. Those who have been cyberbullied or harassed are about 3.3 times more likely to face sexual solicitation/harassment online. Each additional year of age raises the odds of experiencing sexual solicitation/harassment by 39%.

Table 4: Binary logistic regression and odds ratio of factors influencing participants chatting or speaking on phone about sex with someone met online. Only predictors with significance ($p < .05$) were included

	B (SE)	95% CI for Odds Ratio		
		Lower	OR	Upper
Had sexual conversation				
Constant	-4.278 (0.660) ^{***}	0.003	0.014	0.043
Spoke on phone	1.319 (0.588) [*]	1.265	3.740	13.134
Met face-to-face	1.305 (0.538) [*]	1.349	3.687	11.475
Online almost constantly	1.987 (0.502) ^{***}	2.778	7.293	20.156
Experienced blackmail	1.153 (0.559) [*]	1.044	3.167	9.562
Sent nude picture	1.734 (0.440) ^{***}	2.414	5.664	13.660

Note: $R^2 = .411$ (Nagelkerke). Model $\chi^2(5) = 69.484, p < .001$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5: Binary logistic regression and odds ratio of factors predicting participants sending nude pictures to someone met online with. Only predictors with significance ($p < .05$) were included

	B (SE)	95% CI for Odds Ratio		
		Lower	OR	Upper
Sent nude picture				
Constant	-0.440 (0.723)	0.147	0.644	2.587
Gender	-0.936 (0.456)*	0.153	0.392	0.932
Had sexual conversation	2.176 (0.489)***	3.475	8.806	23.974
Parent-child discussion	-1.271 (0.506)*	0.103	0.280	0.764
Pornographic exposure	-1.062 (0.503)*	0.122	0.346	0.891
Added someone to friends list	-1.162 (0.582)*	0.101	0.313	1.016
Met face-to-face	1.096 (0.506)*	1.147	2.992	8.561

Note: $R^2 = .345$ (Nagelkerke). Model $\chi^2(6) = 52.050, p < .001$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6: Binary logistic regression and odds ratio of factors predicting participants experiencing online sexual solicitations and harassment. Only predictors with significance ($p < .05$) were included

	B (SE)	95% CI for Odds Ratio		
		Lower	OR	Upper
Experienced Sexual solicitations and harassment				
Constant	-7.230 (2.113)***	0.000	0.000	0.039
Age	0.329 (0.127)**	1.091	1.390	1.780
Experienced cyberbullying and harassment	1.208 (0.405)**	1.496	3.347	7.407
Experienced blackmail	1.681 (0.491)***	2.056	5.369	14.365

Note: $R^2 = .209$ (Nagelkerke). Model $\chi^2(3) = 33.564, p < .001$. * $p < .05$, ** $p < .01$, *** $p < .001$.

4 Discussion

This study investigated the factors that predict adolescents' engagement in online sexual behaviors and their vulnerability to sexual solicitation and harassment. We first mapped the spectrum of risky online activities reported by adolescents and measured the prevalence of the online risks they face. Survey data from secondary-school students in a North-Central Nigerian state revealed several noteworthy findings.

The results showed that most adolescents broadened their social networks by adding unfamiliar individuals online and, in many cases, went on to extend these relationships into the offline world. Almost one-fifth of adolescents (19.1%) chatted or spoke on the phone about sex with someone they met online, and 15.3% acknowledged sending nude images to an online contact. This is less than the figure reported in [19]. However, their study involved adolescents and young adults in Lagos State, one of the states in the southern region of the country. These findings suggest that the prevalence of

online sexual interactions among adolescents is lower in Northern Nigeria than in the Southern region.

We identified gender differences in two of the activities: speaking on the phone and sending nude pictures to someone only met online, with male adolescents reporting higher rates of both behaviors. These results diverge from those of Adigwe [3], whose survey of Lagos-based adolescents showed that girls were more likely than boys to chat with strangers and engage in sexting. Two contextual factors may account for the findings in the present study. First, Nigeria's pervasive patriarchal structure, particularly pronounced in the North, limits female autonomy [1, 23, 25]. Second, the Northern region's stricter cultural and religious milieu, rooted largely in Islamic norms, imposes tighter social controls on girls than on boys [5, 23, 45]. Together, these patriarchal, cultural, and religious constraints can curtail girls' digital freedom and reduce opportunities for risk-laden interactions, thereby helping to explain why male adolescents in our sample reported higher levels of phone conversations and sharing nude images with online-only contacts.

The results revealed that adolescents confront a broad spectrum of online threats. Content risks include exposure to pornographic or otherwise age-inappropriate material. Contact risks encompass sexual solicitation and harassment, cyberbullying, and blackmail. Conduct risks appear in the form of later regret over the content that the adolescents themselves posted or shared. Finally, privacy risks involve identity theft, phishing emails, and other social-engineering scams. Except for social-engineering scams, males reported higher exposure to every threat category, but none of these gender differences reached statistical significance. The proportion of adolescents in our sample who encountered pornographic content (33.2%) closely matches the 31.3% reported by Kunnuji [19]. In the case of sexual solicitation and harassment, 19.6% of girls and 21.1% of boys in our study reported such experiences, which is higher than the 15.6% of girls and 9.3% of boys found among Spanish adolescents [11]. Moreover, whereas the Spanish study recorded greater exposure among girls, our data show a higher prevalence among boys (though the difference was non-significant).

Adolescents who stay online almost all the time have more than seven times greater chances of engaging in sexual conversations with internet acquaintances. The strong relationship demonstrates that adolescents who use the internet frequently become more exposed to social interactions that either normalize or encourage sexualized behavior, which is in line with existing studies [3, 18, 38]. Also, engaging in phone calls with an online-only acquaintance nearly quadruples an adolescent's odds of moving the exchange toward sexual topics. This pattern suggests that shifting digital communication to the more personal medium of voice communication reduces social distance and lowers inhibitions, making sexual dialogue far more likely.

Experiencing online blackmail, that is, having someone threaten to circulate private information or nude images, also emerged as a strong catalyst for sexual conversations. Adolescents who reported such blackmail were more than three times as likely to engage in sexual dialogue with an online contact. This link suggests a coercive dynamic: once private material is weaponized, victims may feel pressured to comply with the blackmailer's demands, which often include explicit discussion or further sexual acts. In effect, blackmail

not only signals prior vulnerability (e.g., sharing intimate content) but also actively drives deeper, riskier sexual interactions online.

On sending nude pictures to someone only met online, our binary logistic regression revealed several predicting factors that either promote or inhibit such a behavior. Females reported substantially lower odds than males (mirroring the gender difference outcome regarding the same behavior, as presented in Table 2). Parent-child dialogue about online activities appeared protective, lowering the odds of sending nude pictures. Unexpectedly, adolescents who had encountered online pornography were less likely to report sending nude images. One plausible explanation is that accidental or unwanted exposure tends to be unsettling, heightening caution rather than encouraging more sexualized activity. In addition, viewing explicit content may satisfy curiosity vicariously, reducing the perceived need to engage in riskier, participatory behaviors such as sharing their nude images.

Counter-intuitively, adolescents who added someone they had never met offline to their social-media friends list were less likely to send nude images. In sharp contrast, those who progressed from an online acquaintance to an in-person meeting showed a markedly different pattern: their odds of sending a nude image rose almost threefold, and their likelihood of engaging in sexual conversation nearly quadrupled. Taken together, these findings suggest that merely "friending" a stranger represents a superficial connection that often stops short of intimate self-disclosure, whereas moving the relationship into the offline world signals a deeper level of trust and risk where exchanging sexually explicit media and engaging in sexual discussions become far more probable.

A notable pattern is the mutually reinforcing relationship between sexual conversations and the exchange of nude images. Adolescents who had already sent a nude picture were approximately six times more likely to engage in sexual conversations with an online contact, indicating that the act of sharing explicit material lowers inhibitions and normalizes intimate dialogue. The reverse dynamic is even stronger: sexual conversation emerged as the single best predictor of sending a nude image, with the odds surging by almost a ninefold once talk turns explicitly sexual. Together, these findings suggest an escalation sequence in which talking about sex and sharing nude images propel each other forward, steadily deepening an adolescent's involvement in risky online sexual behavior.

Our model of experiencing sexual solicitation and harassment showed that age matters. Each additional year of age raised an adolescent's odds of encountering these threats by roughly 40%, making older teens markedly more at risk than their younger peers. This finding concurs with previous research (e.g., [17]). Prior online victimization emerged as a powerful risk amplifier. Adolescents who had been cyberbullied or harassed were three times more likely to face sexual solicitation or harassment, while those who had experienced online blackmail faced a risk over five times higher—the largest effect in the model. These magnitudes indicate a revictimization cascade, in which earlier harms erode psychological defenses, lower trust thresholds, or expose compromising material that predators can exploit.

4.1 Implications for Practice

Our study has several implications for more responsible, ethical online behavior among Nigerian adolescents and for strengthening their overall digital safety. The substantial proportion of adolescents who reported sexual conversations and the exchange of nude images online highlights an urgent need for targeted, culturally resonant digital literacy interventions to educate adolescents on responsible Internet use. Yisa and Orji [45] note that most online safety initiatives in Nigeria concentrate on financial and data-security threats such as identity theft, online scams, and data breaches while largely neglecting sexually-related risks. Addressing this gap is further complicated by the country's generally conservative attitude toward public discussion of sexual issues [15]. Although experts have repeatedly urged the Nigerian government to embed digital-citizenship education in the national curriculum², the few initiatives that exist are out-of-school campaigns driven almost entirely by non-governmental organizations³.

The findings in our study indicate that more intensive (online “almost constantly”) and escalated (e.g., moving from text chat to phone calls or in-person meetings) forms of online interaction markedly raised the odds that adolescents will engage in sexual conversations with people they know only from the Internet. Intervention efforts should therefore focus on both screen-time balance and risk awareness. Adolescents need concrete, age-appropriate guidance for spotting grooming cues, articulating firm digital boundaries, and using effective refusal or exit strategies the moment an interaction turns sexual.

Open conversations between parents and adolescents about online activities serve as a protective factor, significantly reducing the likelihood that adolescents will send nude images. This finding highlights the pivotal role parents must play in guiding their teenagers toward responsible and safer online behavior. Many parents and guardians lack the digital literacy needed to recognize the hazards their children encounter online, leaving them ill-equipped to supervise effectively [1]. Schools can equip families with practical resources such as conversation guides, model questions, and interactive workshops that shift the focus from rigid rule-setting to judgment-free dialogue and active listening.

Our results further reveal that sexual solicitation and harassment frequently co-occur with earlier victimization, such as online cyberbullying/harassment and online blackmail, and become more prevalent as adolescents grow older. Interrupting that cascade requires rapid intervention at the first sign of harm. Addressing cyberbullying and blackmail promptly can short-circuit the escalation to sexual threats, but only if victims have swift, user-friendly ways to report abuse. Platforms should therefore offer easily accessible, well-publicized reporting tools and real-time support channels to help adolescents flag and resolve incidents before they intensify.

4.2 Limitations and Future Work

The present study has several limitations. First, its exclusive use of self-report measures makes it vulnerable to biases such as social

desirability. Participants may therefore have portrayed their behaviors in a more favorable light than was accurate. Second, some participants, particularly females, may have under-reported their involvement in the online behaviors and risks examined. In Northern Nigeria's strongly patriarchal and conservative cultural and religious context, adolescents can feel uncomfortable disclosing sexuality-related experiences, which may lead to socially desirable responses and an underestimation of true prevalence. Third, because data were gathered from schools in two local government areas of one Nigerian state, the findings cannot be assumed to represent adolescents nationwide. Social, cultural, and educational conditions vary widely across the country, and these differences could shape online experiences and behaviors in ways not captured by our sample. Consequently, the present results should be viewed as context-specific and extrapolated to other states only with caution. Future studies should draw samples from several states nationwide to obtain more representative data. Lastly, our study examined the prevalence and predictors of online sexual behaviors, solicitations, and harassment among adolescents. Future research could investigate the underlying motivations for adolescents' engagement in these risky online behaviors, utilizing established theoretical frameworks such as the Uses and Gratifications Theory (UGT) and Media Dependency Theory (MDT), among others.

5 Conclusion

The current study explores adolescents' online interactions and experiences in Nigeria with a focus on their sexual behaviors and experiences of sexual solicitation and harassment. It shows that a substantial proportion of adolescents engage in sexual conversations with Internet-only contacts and a smaller group share nude images, with boys doing so more often than girls—patterns likely shaped by patriarchal and religious norms prevalent in the North. Constant connectivity, phone calls, in-person meetings, and prior blackmail sharply raise the likelihood of sexual dialogue or sending nude pictures, whereas parent-child discussions are protective. Age, cyberbullying and harassment, and blackmail create a cascade leading to sexual solicitation and harassment, illustrating how risk intensifies with deeper contact and accumulated victimization. Interventions should couple sexual-risk digital-citizenship lessons, parent engagement that prompts open dialogue, and platform tools that simplify reporting.

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