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Research Paper

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ABSTRACT

Although considerable literature has grown around cyberbullying, there are still only limited studies on this within developing economies, especially African countries. In particular, studies on cyberbullying in Africa have failed to have a direct focus on the prevalence of this phenomenon among students in universities. Not only does cyberbullying have an emotional-social impact, it has ramifications on the learning process as well. This subject remains of utmost relevance within academia, and a number of institutions continue to grapple with its impact. The study reported here is an exploratory investigation of 396 students from one of the private universities within Nairobi, Kenya, which aimed at understanding the prevalence of cyberbullying. The study findings revealed that the highest form of victimization was through the act of deception, in which 75.8% of the respondents indicated someone had lied to them electronically. On the other hand, the highest form of perpetration of cyberbullying was through malice, in which 49.7% of the respondents reported sending a rude message to someone electronically. Further, more male students were more likely to commit acts of cyberbullying compared to their female counterparts. This study confirms the existence of cyberbullying within institutions of higher learning in Kenya, with the possibility of generalizability to other developing economies. The level of prevalence reported in this study appears slightly high in comparison to a majority of the findings from the developed economies. Consequently, we submit that it is imperative that educational systems in Africa and other developing economies put in frameworks to deal with the emerging reality of cyberbullying within institutions of higher learning. Such frameworks should facilitate the implementation of useful strategies to help victims of cyberbullying, and at the same, time offer deterrents to the perpetration of cyberbullying.

Keywords

Cyberbullying, cyberbullying prevalence, universities, developing countries, developing economies, Kenya.

INTRODUCTION

There is general agreement among researchers and practitioners that the use of Information Technology (IT) has several benefits in the promotion of teaching and learning within academia (Facer & Sandford, 2010; Manca & Ranierit, 2016; Chingos, Griffiths, Christine, & Richard, 2017; Assar, Amrani, & Watson, 2010; Büyükbaykal, 2015). Students not only use technology for academic purposes but also for social engagements through social media platforms such as Facebook, Twitter, and Instagram, among others. Further, there has been a rise in the use of smart mobile phone devices to enhance these experiences. This online world presents a new environment in which vulnerable university students can fall victim to perpetrators of cyberbullying who find electronic means as a perfect avenue to engage in acts of harassment.

Over the years, a large and growing body of literature has continued to focus on cyberbullying, giving it considerable critical attention (Ak, Özdemir, & Kuzucu, 2015; Akbulut & Eristi, 2011; Celik, Atak, & Erguzen, 2012; Watts, Wagner, Velasquez, & Behrens, 2017). However, it is worth noting that the prevalence level of this phenomenon is not largely known in developing economies, especially countries on the African continent. A significant number of studies have been carried out within institutions of higher learning with the view of understanding the extent of cyberbullying. However, these studies have focused largely on developed economies (Orel, Campbell, Wozencroft, Leong, & Kimpton, 2017; Washington, 2014; Elçi & Seçkin, 2016; Selkie, Kota, Chan, & Moreno, 2015). Consequently, there is very little known regarding cyberbullying in institutions of higher learning in developing economies and specifically countries in Africa.

Over recent years, Kenya's higher education sector has witnessed tremendous growth in terms of the number of universities and student enrolments (Mulinge, Arasa, & Wawire, 2017). It is worth observing that a good number of these students have active cyber life. In Kenya, for example, a National Information and Communication Technology (ICT) survey conducted by the Communication Authority of Kenya revealed that the use and access to IT equipment and facilities was more prevalent among youth aged between 20 and 34 years (Communication Authority of Kenya, 2018). This is typically the age at which many students join the university. It may be concluded, therefore, that a good number of the students joining Kenyan universities are technologically literate and regularly use IT. According to statistics from the International Telecommunication Union (ITU), the number of Internet users in Kenya grew from 21% in 2016 to 26% in 2017 (ITU, 2018). Such increase in the use of technology means more exposure to technology-related incidents like cyberbullying.

As Kenya matures into an information society, it is getting confronted increasingly by an evolving cyber threat landscape, and cyberbullying cases in the country have attracted considerable media attention in recent years. The country's press provides anecdotal evidence indicating that cyberbullying is slowly but steadily taking root in the country (Business Daily, 2019; The Star, 2017; Daily Nation, 2017; Standard, 2018). Evidently, the government of Kenya recognizes the present challenge of cyberbullying within the country and the need for regulations and frameworks to address it. To this end, it has established the Computer and Cybercrime Bill of 2017 which became law in May 2018 (Government of Kenya, 2018). Section 14 of this law gives focus to cyberbullying. With a majority of students today being digital natives, there is a growing need for academic institutions to be conscious of the cyberbullying crisis.

Not only does cyberbullying have an emotional-social impact, it has ramifications on the learning process as well (Celik, Atak, & Erguzen, 2012). Consequently, this subject remains of utmost relevance within academia, and a number of institutions continue to grapple with its impact. Education and awareness of the challenges related to cyberbullying within institutions of higher learning in developing economies are thus necessary.

In this paper, we are guided and motivated by the following arguments: That there is growing use of ICT by a large population of students within universities in Kenya. That such widespread use of technology exposes the users even more to technology-related threats and abuses such as cyberbullying. Although studies on cyberbullying have been carried out in universities in more developed economies, we know considerably less about this subject in developing economies such as Kenya. That the understanding of the cyberbullying phenomenon within universities may prove useful in designing instructional initiatives aiming to address cyberbullying within the academic environment.

Taking all these into consideration, the primary objective of this paper is to examine the problem of cyberbullying in institutions of higher learning in developing economies by looking at its prevalence in one of the universities within Nairobi, Kenya.

This introduction section is followed by a presentation of the literature review on cyberbullying. The methodological processes adopted in this study are then presented, followed by findings and discussions. We then conclude the paper by summarizing the study and making recommendations for future research directions.

LITERATURE REVIEW

There has been considerable debate among researchers regarding the meaning attached to cyberbullying (Langos, 2012; Ramos & Bennett, 2016; Elçi & Seçkin, 2016). This is largely so because cyberbullying is a relatively new phenomenon. Thus, there is still the lack of a solid theoretical foundation on the construct. Additionally, consensus still lacks among researchers regarding specific parameters that can be employed to measure cyberbullying. This can be attributed to the fact that the act can take a variety of forms and can be perpetrated through several means (Kyobe, Oosterwyk, & Kabiawu, 2016; Matjorie & Toks, 2015; Kowalski, Toth, & Morgan, 2018). This has rendered conceptualization of cyberbullying even more challenging. Consequently, the concept of cyberbullying remains nebulous and is defined and measured inconsistently.

However, there have been commonalities on the operational definition of cyberbullying by a number of researchers (Ak, Özdemir, & Kuzucu, 2015; Elçi & Seçkin, 2016; Zalaquette & Chatter, 2014; Watts, Wagner, Velasquez, & Behrens, 2017). To this end, cyberbullying has been viewed as an aggression that is executed intentionally and repeatedly through the use of electronic means such as e-mails, text messages, and or social media platforms like Facebook, Twitter, and LinkedIn, among others.

Researchers have identified the existence of different forms of cyberbullying. These include the use of written or verbal forms of bullying; a visual form, which includes attacks made through the posting of compromising pictures; impersonation, which relates to the use of identity theft, such as revealing someone's personal information using their accounts; and exclusion, which involves deliberately excluding someone from a social group (Bauman & Baldasare, 2015; Elçi & Seçkin, 2016; Okoiye, Nwoga, & Onah, 2015; Brody & Vangelisti, 2017).

In the new global economy, cyberbullying is fast becoming a global societal issue. Moreover, its occurrence is never restricted to a particular age group. However, a number of studies have indicated that cyberbullying is more prevalent with teenagers (Celik, Atak, & Erguzen, 2012; Zalaquette & Chatter, 2014; Selkie, Kota, Chan, & Moreno, 2015). The widespread rise in cyberbullying has been fueled by, among other things, the fact that the act can be done anonymously through the virtual environment. This gives the perpetrators a sense of security and control.

Much of the current literature on cyberbullying has demonstrated its pervasive nature and established that a significant number of students in institutions of higher learning have been affected by

cyberbullying (Orel, Campbell, Wozencroft, Leong, & Kimpton, 2017; Elçi & Seçkin, 2016; Zalaquette & Chatter, 2014; Brody & Vangelisti, 2017). The socio-emotional outcomes of cyberbullying, like anxiety and depression, among others, and its ramification on the learning process of the students not only affect the victims and perpetrators, but equally impact teachers, families, and others within the students' social circles and environment (Elçi & Seçkin, 2016; Brewer & Kerslake, 2015; Nikolaou, 2017). Nikolaou (2017), for example, observes that cyberbullying leads to substantial increases in tragic experiences, such as suicide mortality. Such extreme consequences have heightened the need for a deeper understanding of cyberbullying within different populations and cultures. It is worrisome, however, that many victims continue to fail to report cyberbullying (Watts, Wagner, Velasquez, & Behrens, 2017; Sarmiento, Herrera-López, & Zych, 2019). This makes it even more challenging to deal with.

The estimated prevalence of cyberbullying varies across studies depending on the nature of the population under investigation (like gender, age, region), the operational definition of the term adopted, among others. However, a considerable amount of recent literature has continued to establish that the prevalence rate of cyberbullying varies roughly between 10% and 40% (Bauman & Baldasare, 2015; Doane, Kelly, & Pearson, 2016; Zalaquette & Chatter, 2014; Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Lee & Shin, 2017; Watts, Wagner, Velasquez, & Behrens, 2017). Despite these variations, it is an uncontested fact that cyberbullying continues to draw attention the world over.

The fact that the perpetrators can engage in this act anonymously through the electronic platform makes it even more attractive in comparison to the traditional form of cyberbullying, which requires physical presence (Asher, Stark, & Fireman, 2017; Knauf, Eschenbeck, & Hock, 2018). Additionally, due to the infinite nature of the Internet, the effect of cyberbullying, like humiliation, might be permanent. Likewise, the content placed in electronic form can be accessed repeatedly and there is limited or no control on the number of individuals who can gain access to such content. This means that cyberbullying can be perpetrated on a much wider scale.

Cyberbullying has been viewed as a social process that is multidimensional. To this end, cyberbullying consists of cyber-victimization and cyber-perpetration (Festl, Vogelgesang, Scharkow, & Quandt, 2017; Ak, Özdemir, & Kuzucu, 2015). Perpetration and victimization may be expressed through acts such as: public humiliation, malice, unwanted contact, and deception (Hong, Kim, Thornberg, Kang, & Morgan, 2018; Thomas, Connor, & Scott, 2015). In this study, therefore, given the multidimensional nature of cyberbullying, we considered both the victimization and perpetration facets of the construct. Consequently, the conceptual outlook that guided this study is presented in Figure 1.

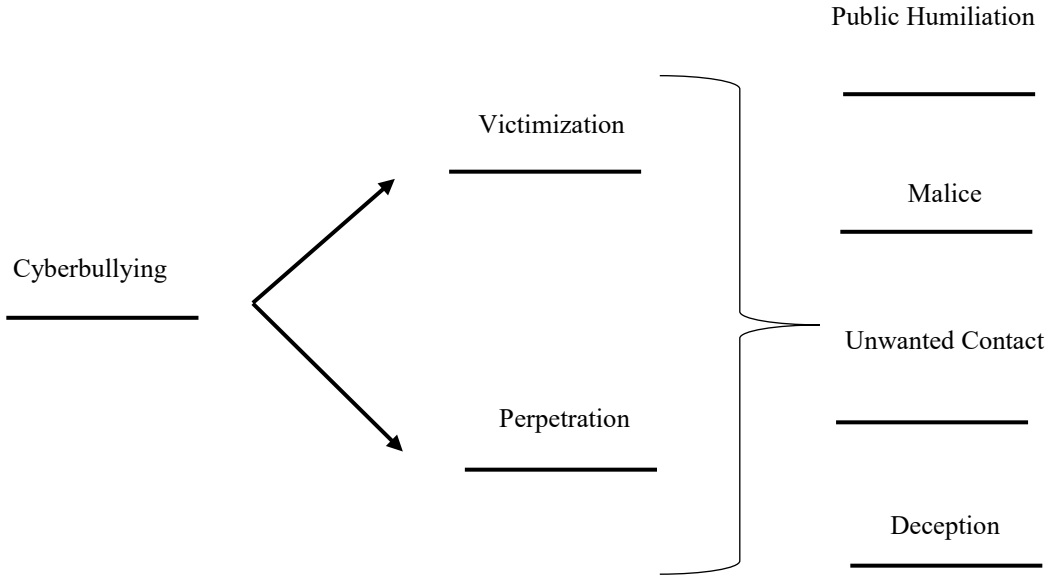

Figure 1. Conceptual outlook

Source: Authors' own illustration

While considerable literature has grown around cyberbullying, there is limited literature on the same within developing economies, and especially in Africa. In particular, studies on cyberbullying in Africa have failed to have a direct focus on its prevalence among students in universities (Okoiye, Nwoga, & Onah, 2015; Kyobe, Oosterwyk, & Kabiawu, 2016; Matjorie & Toks, 2015; Oyewusi & Orolade, 2014; Kyobe, Mimbi, Nembandona, & Mtshazi, 2018). However, more and more people continue to be confronted with cyberbullying and it is becoming an increasingly widespread phenomenon within institutions of higher learning (Elçi & Seçkin, 2016; Ramos & Bennett, 2016; Bauman & Baldasare, 2015; Doane, Kelly, & Pearson, 2016).

Our literature search (with search terms accommodating various terminologies for cyberbullying like: online harassment, cybervictimization, cyberharassment, electronic bullying) on cyberbullying in Kenya on various databases, including E-Journals, Academic Search Complete, Psychology and Behavioral Sciences Complete, PsycArticles, Education Science, and ScienceDirect, did not yield any results. This is a clear indication that there is need for the research community to carry out studies on cyberbullying in the least researched countries, like Kenya.

The government of Kenya, however, recognizes the imminent reality of cybersecurity challenges in the country and consequently has put in place measures to tackle them. Among such measures are the Computer and Cybercrime Bill 2017, with Section 14 of the bill paying specific attention to cyberbullying; and the development of a National Cybersecurity Strategy which, among other things, defines the country's cybersecurity vision, goals, and objectives to secure the country's cyberspace (Government of Kenya, 2018). With the proliferation and accessibility of the Internet, mobile devices, as well as social media platforms, cyberbullies are able to engage in the act with much less effort but greater impact. It should be noted that Kenya has an impressive Internet and mobile penetration rate, currently standing at over 80% (Communication Authority of Kenya, 2017). Consequently, this means that the majority of the country's population is exposed more to technology-related threats and abuses, like cyberbullying.

Hence, the purpose of this study is to make a contribution to the present knowledge base on cyberbullying in institutions of higher learning in Africa. We do so by investigating the prevalence of cyberbullying in one of the universities within Nairobi, Kenya.

METHODOLOGY

In this study, we made use of an exploratory case study research design to understand the prevalence of cyberbullying in one of the private universities (a privately-funded independent university) within Nairobi, Kenya. The exploratory case study examines distinct phenomena characterized by a lack of comprehensive preliminary research (Yin, 2018). Data was collected from a convenience sample of 396 students who were then enrolled among a population of 6,500 students. This study was approved by the university's Institutional Review Board. Moreover, informed consent was obtained from all the participants. To ensure that privacy rights were respected, the participants' responses were anonymous. The criteria for engaging in the study required the participants to be registered university students. There were no rewards for participation in the study. Data was collected between November 2017 and January 2018, and the survey instruments were distributed during class after receiving consent from each course instructor.

The study made use of a cyberbullying victimization and perpetration survey that was proposed by Doane, Kelly, Chiang, and Padilla (2013) who did an exploratory factor analysis and confirmatory factor analysis on two separate groups of students. The outcome was a 21-item victimization scale and a 20-item perpetration scale consisting of four factors: malice, public humiliation, unwanted contact, and deception. This cyberbullying experiences survey instrument has satisfactory internal consistency as well as convergent validity with other instruments that have been used to measure cyberbullying (Doane, Kelly, Chiang, & Padilla, 2013). Furthermore, a number of researchers have used the instrument successfully in their studies (Bauman & Baldasare, 2015; Doane, Kelly, & Pearson, 2016; Cole, Nick, Zelkowitz, Roeder, & Spinelli, 2017; Snyman & Loh, 2015). The instrument was also considered because it takes into consideration a broad range of different forms of cyberbullying. This increases the probability of offering a richer understanding on the frequency and methods of occurrence. Likewise, from this study, the instrument was found to be reliable, with a Cronbach's alpha of 0.95.

The following demographic details were captured in the first section of the questionnaire to help understand possible differences in cyberbullying experiences: age category, gender, year of study, where they live, number of hours spent online on a typical day, and the school they belong to. All 21 items on the victimization scale and the 20 items on the perpetration scale were each measured using a five-point Likert scale (Not at all, 1-2 times, 3-4 times, Once a week, and Several times a week). The participants were asked how often during their university life they had experienced each of the various forms of cyberbullying as was presented in the survey instrument.

The analysis of the questionnaire items was done using STATA, version 11. STATA is a statistical software package that provides a wide range of basic and advanced data analysis capabilities. Use of descriptive statistics (frequencies and percentages) was employed. To help make a determination on which category of students are more or less likely to be victims or perpetrators of cyberbullying, the study made use of logistic regression analysis. Both victims and aggressors/perpetrators were considered to have experienced or carried out the act(s) of cyberbullying at least once since joining the university (Coelho, Sousa, Marchante, Brás, & Romão, 2016).

RESULTS

To facilitate characterization of the study sample, the demographic details of the respondents were captured as follows: 49.7% (*n*=197) female, and 50.3% (*n*=199) male; 30.1% (*n*=119) were aged between 16 – 20 years old, 44.4% (*n*=176) were aged between 21-25 years old, 13.1% (*n*=52) were aged between 26-30 years old, and 12.4% (*n*=49) were aged 31 years and above. Regarding year of study, 1st-year students were the highest number of participants at 26% (*n*=103), followed by 2nd-year at 24% (*n*=95), 3rd-year at 18.2% (*n*=72), and 4th-year students at 11.6% (*n*=46). Postgraduate students were the third highest number of participants in the study at 20.2% (*n*=80). The participants were also required to indicate their place of residence. Those who lived in on-campus hostels were the smallest population at 5.3% (*n*=21). Those who lived off campus with their parents formed 38.4% (*n*=152), while the majority lived off campus alone or with friends at 56.3% (*n*=223). Regarding the number of hours spent online on a typical day, a majority of the students, at 46.5% (n=184), indicated that they spent over 5 hours online, 42.2% (*n*=167) spent between 3-4 hours, while 11.4% (*n*=45) spent between 1-2 hours. A majority of the students were from the School of Technology at 39.6% (*n*=157); this was followed by those from the School of Business at 33.3% (*n*=132). Those from the School of Humanities and Social Sciences were at 17.7% (*n*=70), while those from Health Sciences formed the smallest population at 9.3% (*n*=37).

The victimization and perpetration items were grouped under the following themes: Public Humiliation; Malice; Unwanted Contact; and Deception.

Victimization

The least prevalent form of victimization was public humiliation. Under this category, the highest form of cyberbullying involved writing mean messages electronically about someone publicly at 31.3%. Under malice, the prevalence rate was significantly high for most items. For example, of the five questions posed for respondents under this section, 55.6% of the students surveyed indicated that someone had been mean to them electronically. Similarly, 52.8% stated someone had made fun of them electronically, while 54.3% pointed out that someone had teased them electronically. Regarding victimization through unwanted contact, 51.3% indicated that they had received pornographic pictures electronically that they did not want from someone and the message was not spam. The number of those that had received unwanted sexual messages from someone electronically stood significantly high, at 56.8%. Of those who had been victims of cyberbullying under deception, being lied to electronically topped the prevalence rate of cyberbullying, with only 24.2% indicating that they had not experienced this form of cyberbullying, while 75.8% indicated that they had been victims of cyberbullying. Table 1 presents the prevalence of victimization among the study participants.

Victimization	**Levels of prevalence**									
	Not at all		**1–2 times**		**3–4 times**		**Once a week**		**Several times a week**	
	n	%	n	%	n	%	n	%	n	%
Public Humiliation										
Has someone distributed information electronically while pretending to be you?	291	73.5	86	21.7	15	3.8	3	0.8	1	0.3
Has someone changed a picture of you in a negative way and posted it electronically?	341	86.1	49	12.4	5	1.3	1	0.3	0	0
Has someone written mean message(s)	272	68.7	94	23.7	22	5.6	5	1.3	3	0.8

electronically about you publicly?										
Has someone logged into your electronic account and changed your information?	306	77.3	73	18.4	13	3.3	0	0	4	1.0
Has someone posted a nude picture of you electronically?	380	96.0	11	2.8	0	0	2	0.5	3	0.8
Has someone printed out an electronic conversation you had and then showed it to others?	306	77.3	62	15.7	23	5.8	0	0	5	1.3
Have you completed an electronic survey that was supposed to remain private but the answers were sent to someone else?	332	83.8	51	12.9	9	2.3	1	0.3	3	0.8
Has someone logged into your electronic account and pretended to be you?	283	71.5	92	23.2	16	4.0	1	0.3	4	1.0
Has someone electronically posted an embarrassing picture of you where other people could see it?	305	77.0	73	18.4	16	4.0	1	0.3	1	0.3
Malice										
Has someone electronically called you mean names?	210	53.0	119	30.1	50	12.6	4	1.0	13	3.3
Has someone been mean to you electronically?	176	44.4	155	39.1	43	10.9	6	1.5	16	4.0
Has someone cursed at you electronically?	200	50.5	119	30.1	42	10.6	8	2.0	27	6.8
Has someone made fun of you electronically?	187	47.2	120	30.3	57	14.4	6	1.5	26	6.6
Has someone teased you electronically?	181	45.7	126	31.8	57	14.4	6	1.5	26	6.6
Unwanted Contact										
Have you received a nude or partially nude picture that you did not want from someone you were talking to electronically?	198	50.0	125	31.6	45	11.4	9	2.3	19	4.8
Have you received a pornographic picture that you did not want from someone electronically that was not spam?	193	48.7	132	33.3	54	13.6	4	1.0	13	3.3
Have you received an unwanted sexual message from someone electronically?	171	43.2	132	33.3	67	16.9	6	1.5	20	5.1
Have you received an offensive picture electronically that was not spam?	182	46.0	126	31.8	62	15.7	7	1.8	19	4.8
Deception										
Has someone pretended to be someone else while talking to you electronically?	147	37.1	157	39.6	68	17.2	2	0.5	22	5.6
Has someone lied about themselves to you electronically?	96	24.2	151	38.1	105	26.5	4	1.0	40	10.1
Have you shared personal information with someone electronically and then later found the person was not who you thought it was?	234	59.1	107	27.0	41	10.4	3	0.8	11	2.8

Table 1. Victimization Prevalence

On cross tabulation with various demographic factors using regression analysis, under public humiliation as indicated in Table 2, this study did not find any significant correlation between the students' age category, gender, where they lived, and hours spent online and cyberbullying victimization through public humiliation. However, 2nd- and 3rd-year students were more likely to experience cyberbullying through public humiliation (OR=1.988, p-value=0.044 and OR=3.087, p-value=0.003 respectively) compared to 1st-year students. Similarly, students from the Schools of Humanities and Social Sciences and those from Health Sciences were more likely to experience cyberbullying through public humiliation (OR=2.321, p-value=0.015 and OR=3.983, p-value=0.004 respectively) compared to those from the School of Technology.

Factor	OR (95% CI)	p-value
Age category		
16-20 years	1.00 (Ref)	
21-25 years	1.006829 [.5705758 1.776633]	0.981
26-30 years	1.101831 [.4532244 2.678653]	0.831
31 and above	.6973822 [.2619808 1.856403]	0.471
Gender		
Female	1.00 (Ref)	
Male	1.43397 [.9141981 2.249259]	0.117
Year of study		
First	1.00 (Ref)	
Second	1.988289 [1.019619 3.877225]	0.044
Third	3.087746 [1.451514 6.568435]	0.003
Fourth	.9860493 [.4311464 2.255135]	0.973
Post-grad	1.525676 [.6235918 3.732712]	0.355
Where they live		
On campus	1.00 (ref)	
Home with parents	1.234449 [.4515767 3.374543]	0.681
Off campus	1.378083 [.5026869 3.777924]	0.533
Hours spent online		
1-2	1.00 (Ref)	
3-4	.9940898 [.4901737 2.01605]	0.987
Over 5	1.062525[.5207339 2.168016]	0.868
School		
Technology	1.00 (Ref)	
Humanities	2.321199 [1.179903 4.566446]	0.015
Health Sciences	3.983516 [1.570409 10.10462]	0.004
Business	1.187228 [.6954462 2.026772]	0.529

Table 2. Logistic Regression relating victimization through Public Humiliation with Demographic Factors

Regarding cross tabulation on demographics items and malice as a form of cyberbullying victimization, while other demographic items recorded insignificant correlation, 2nd-year students were significantly more likely to experience malice as a form of cyberbullying (OR=1.971, p-value=0.044) compared to 1st-year students, as indicated in Table 3.

Factor	OR (95% CI)	p-value
Age category		
16-20 years	1.00 (Ref)	
21-25 years	1.354795 [.7465407 2.458634]	0.318
26-30 years	2.484146 [.9273767 6.654235]	0.070
31 and above	1.741381 [.6068465 4.996994]	0.302
Gender		
Female	1.00 (Ref)	
Male	1.013917 [.6304392 1.630652]	0.06
Year of study		
First	1.00 (Ref)	
Second	1.971437 [.9703127 4.005474]	0.044
Third	1.568999 [.7360834 3.344401]	0.243
Fourth	.8622822 [.3619383 2.054302]	0.738
Post-grad	1.031578 [.3941989 2.699532]	0.06

Where they live		
On campus	1.00 (ref)	
Home with parents	.9358178 [.3167281 2.765005]	0.904
Off campus	.8093181 [.274644 2.38489]	0.701
Hours spent online		
1-2	1.00 (Ref)	
3-4	1.307142 [.6444156 2.651427]	0.458
Over 5	2.086992[1.011437 4.306284]	0.047
School		
Technology	1.00 (Ref)	
Humanities	1.272379 [.6347081 2.550698]	0.497
Health sciences	4.623285 [1.444356 14.79882]	0.010
Business	.5330553 [.3052979 .9307235]	0.027

Table 3. Logistic Regression relating Victimization through Malice with Demographic Factors

On unwanted contact cross tabulation with various demographic items (see Table 4), the study recorded the existence of a significant correlation between the hours the students spent online and victimization of cyberbullying through unwanted contact. Students who spent more than five hours online were more likely to be victims of cyberbullying through unwanted contact (OR=2.441, p-value=0.0.018) compared to those who spent between 1-2 hours. Equally, students from the School of Health Sciences were more likely to fall victim to cyberbullying through unwanted contact in comparison to those from the School of Technology (OR=4.376, p-value=0.008).

Factor	**OR (95% CI)**	**p-value**
Age category		
16-20 years	1.00 (Ref)	
21-25 years	2.186097 [1.20354 3.970806]	0.010
26-30 years	3.855642 [1.369482 10.85518]	0.011
31 and above	3.031068 [.9820278 9.35551]	0.054
Gender		
Female	1.00 (Ref)	
Male	.6819766 [.4187459 1.110678]	0.124
Year of study		
First	1.00 (Ref)	
Second	3.00775 [1.443789 6.265847]	0.003
Third	1.164955 [.5570862 2.436104]	0.685
Fourth	.9055607 [.3774531 2.172561]	0.824
Post-grad	1.114323 [.4069409 3.051341]	0.833
Where they live		
On campus	1.00 (ref)	
Home with parents	1.496574 [.5397009 4.149953]	0.438
Off campus	1.903887 [.6843997 5.296301]	0.217
Hours spent online		
1-2	1.00 (Ref)	
3-4	2.053296 [.9941362 4.240892]	0.052
Over 5	2.44187 [1.168558 5.102641]	0.018
School		
Technology	1.00 (Ref)	
Humanities	.8817429 [.4440566 1.750837]	0.719
Health sciences	4.376745 [1.464707 13.07832]	0.008
Business	.7611553 [.4240941 1.366106]	0.360

Table 4. Logistic Regression relating Victimization through Unwanted Contact with Demographic Factors

Finally, under deception, the regression analysis revealed that there was a significant correlation between the hours students spent online and being victims of cyberbullying through deception (see Table 5). According to the findings, students who spent more than 5 hours online were more likely to be victims of cyberbullying through acts of deception (OR=2.450, p-value=0.022).

Factor	OR (95% CI)	p-value
Age category		
16-20 years	1.00 (Ref)	
21-25 years	.9635239 [.4966761 1.869182]	0.912
26-30 years	1.138939 [.391736 3.311367]	0.811
31 and above	.7008995 [.2264488 2.169409]	0.538
Gender		
Female	1.00 (Ref)	
Male	1.551741 [.9087407 2.649709]	0.108
Year of study		
First	1.00 (Ref)	
Second	1.932231 [.8698286 4.292246]	0.106
Third	1.28548 [.5636467 2.931727]	0.551
Fourth	2.407154 [.8289969 6.989638]	0.106
Post-grad	2.022999 [.6984977 5.859035]	0.194
Where they live		
On campus	1.00 (ref)	
Home with parents	.2378899 [.0297219 1.90404]	0.176
Off campus	.2007724 [.0251105 1.605285]	0.130
Hours spent online		
1-2	1.00 (Ref)	
3-4	1.794999 [.8462458 3.807431]	0.127
Over 5	2.450552 [1.135311 5.289481]	0.022
School		
Technology	1.00 (Ref)	
Humanities	1.595908 [.6896914 3.692842]	0.275
Health sciences	2.04155 [.6703163 6.217851]	0.209
Business	.5944769 [.3173158 1.113726]	0.104

Table 5. Logistic Regression relating Victimization through Deception with Demographic Factors

Perpetration

Regarding perpetration under unwanted contact, 33.6% observed that they had tried to get information from someone they had communicated to electronically who did not want to provide the information. Other items under unwanted contact fell between 23% and 8.8%. The most common form of perpetration was malice, which involved sending rude messages to someone electronically, stood at 49.7%. On the other hand, 46.5% said they had teased someone electronically, and 45.7% had been mean to someone electronically. While 48.7% indicated that they had made fun of someone electronically, the least prevalent form of perpetration under malice involved calling someone mean names electronically, which stood at 38.4%. Of the three questions posed under deception, the highest forms were those who had lied about themselves to someone electronically, which stood at 43.7%. Public humiliation was the least prevalent form of cyberbullying perpetration, with prevalence falling between 15.7% and 12.9%. Table 6 provides the prevalence of perpetration.

Perpetration	Levels of prevalence									
	Not at all		1–2 times		3–4 times		Once a week		Several times a week	
	n	%	n	%	n	%	n	%	n	%
Unwanted Contact										
Have you sent an unwanted pornographic picture to someone electronically?	355	89.6	32	8.1	2	0.5	4	1.0	3	0.8
Have you tried to meet someone in person that you talked to electronically who did not want to meet you in person?	304	76.8	70	17.7	18	4.5	1	0.3	3	0.8
Have you sent an unwanted sexual message to someone electronically?	344	86.9	40	10.1	11	2.8	0	0.0	1	0.3
Have you sent an unwanted nude or partially nude picture to someone electronically?	352	88.9	38	9.6	3	0.8	2	0.5	1	0.3
Have you sent a message to a person electronically that claimed you would try to find out where they live?	335	84.6	48	12.1	10	2.5	0	0.0	3	0.8
Have you tried to get information from someone you talked to electronically that they did not want to give?	263	66.4	92	23.2	32	8.1	2	0.5	7	1.8
Have you sent a message electronically to a stranger requesting sex?	361	91.2	21	5.3	10	2.5	1	0.3	3	0.8
Have you asked a stranger electronically about what they were wearing?	320	80.8	54	13.6	12	3.0	2	0.5	8	2.0
Malice										
Have you sent a rude message to someone electronically?	199	50.3	138	34.8	35	8.8	4	1.0	20	5.1
Have you teased someone electronically?	212	53.5	124	31.3	30	7.6	10	2.5	20	5.1
Have you been mean to someone electronically?	215	54.3	124	31.3	33	8.3	8	2.0	16	4.0
Have you called someone mean names electronically?	244	61.6	91	23.0	34	8.6	8	2.0	19	4.8
Have you made fun of someone electronically?	203	51.3	113	28.5	37	9.3	6	1.5	37	9.3
Deception										
Have you pretended to be someone else while talking to someone electronically?	259	65.4	101	25.5	25	6.3	0	0.0	11	2.8
Has someone shared personal information with you electronically when you pretended to be someone else?	303	76.5	68	17.2	18	4.5	0	0.0	7	1.8
Have you lied about yourself to someone electronically?	223	56.3	115	29.0	36	9.1	1	0.3	21	5.3
Public Humiliation										
Have you posted an embarrassing picture of someone electronically where other people could see it?	345	87.1	34	8.6	11	2.8	1	0.3	5	1.3
Have you posted a picture of someone electronically that they did not want others to see?	344	86.9	38	9.6	9	2.3	3	0.8	2	0.5
Have you posted a picture electronically of someone doing something illegal?	334	84.3	45	11.4	9	2.3	2	0.5	6	1.5

Table 6. Perpetration Prevalence

Cross tabulation between various demographic items and different perpetration themes was also conducted through regression analysis. Under unwanted contact, a significant correlation was noted between the age category and perpetration of cyberbullying through unwanted contact. From Table 7, students who were between 21 and 25 years old were more likely to perpetrate cyberbullying through unwanted contact compared to those between 16 and 20 years old (OR=1.764, p-value=0.038). Further, male students were more likely to perpetrate acts of cyberbullying through unwanted contact compared to their female counterparts (OR=1.587, p-value=0.038).

Factor	OR (95% CI)	p-value
Age category		
16-20 years	1.00 (Ref)	
21-25 years	1.76404 [1.033271 3.011638]	0.038
26-30 years	1.299546 [.5561901 3.036408]	0.545
31 and above	.8924111 [.343401 2.319148]	0.815
Gender		
Female	1.00 (Ref)	
Male	1.587776 [1.026047 2.457032]	0.038
Year of study		
First	1.00 (Ref)	
Second	1.427653 [.7488315 2.72183]	0.280
Third	1.09885 [.5493721 2.197913]	0.790
Fourth	.6465824 [.2846353 1.468788]	0.790
Post-grad	.7014567 [.2900631 1.696326]	0.431
Where they live		
On campus	1.00 (ref)	
Home with parents	.7726862 [.2947593 2.025531]	0.600
Off campus	1.107937 [.4229682 2.902169]	0.835
Hours spent online		
1-2	1.00 (Ref)	
3-4	1.667133 [.8106616 3.428475]	0.165
Over 5	1.929816 [.9379472 3.970574]	0.074
School		
Technology	1.00 (Ref)	
Humanities	1.13711 [.6103836 2.118371]	0.686
Health sciences	1.488039 [.6535897 3.387846]	0.344
Business	.6862048 [.4040508 1.165391]	0.163

Table 7. Logistic Regression relating Perpetration through Unwanted Contact with Demographic Factors

As presented in Table 8, there was no significant correlation between various demographic items and perpetration of cyberbullying through acts of malice.

Factor	OR (95% CI)	p-value
Age category		
16-20 years	1.00 (Ref)	
21-25 years	1.559607 [.8653861 2.81074]	0.139
26-30 years	.9613198 [.3956291 2.335864]	0.931
31 and above	1.081805 [.4013473 2.915935]	0.876
Gender		
Female	1.00 (Ref)	

Male	1.232773 [.7720295 1.968485]	0.381
Year of study		
First	1.00 (Ref)	
Second	1.00199 [.5055454 1.985944]	0.995
Third	1.650139 [.7471127 3.644644]	0.215
Fourth	.8180084 [.3427351 1.952347]	0.651
Post-grad	.9409978 [.3725644 2.376708]	0.898
Where they live		
On campus	1.00 (ref)	
Home with parents	.6607568 [.2010127 2.172]	0.495
Off campus	.5539611 [.1691267 1.814455]	0.329
Hours spent online		
1-2	1.00 (Ref)	
3-4	1.306794 [.6430377 2.655691]	0.460
Over 5	1.387899 [.67891 2.837288]	0.369
School		
Technology	1.00 (Ref)	
Humanities	1.337345 [.6675951 2.679005]	0.412
Health sciences	1.652347 [.6528696 4.181924]	0.289
Business	.9085402 [.5196384 1.588499]	0.737

Table 8. Logistic Regression relating Perpetration through Malice with Demographic Factors

The study found significant correlation between the hours students spent online, the school they belonged to, and perpetration of cyberbullying through deception. As indicated in Table 9, the students who spent 3-4 hours online and those who spent over 5 hours online were more likely to perpetrate cyberbullying through acts of deception (OR=2.125, p-value=0.014 and OR=3.364, p-value=0.020 respectively) compared to those who spent between 1-2 hours daily. Further, students from the School of Business were more likely to perpetrate cyberbullying through deception compared to students from the School of Technology.

Factor	**OR (95% CI)**	**p-value**
Age category		
16-20 years	1.00 (Ref)	
21-25 years	1.094417 [.6418618 1.866053]	0.740
26-30 years	.4830412 [.206487 1.129993]	0.093
31 and above	.6060107 [.2327106 1.578136]	0.305
Gender		
Female	1.00 (Ref)	
Male	.8569074 [.5533318 1.327034]	0.489
Year of study		
First	1.00 (Ref)	
Second	.7450353 [.3923989 1.414575]	0.368
Third	.8292773 [.4119098 1.669543]	0.600
Fourth	.7018852 [.3098012 1.59019]	0.396
Post-grad	.5743372 [.2376105 1.388252]	0.218
Where they live		
On campus	1.00 (ref)	
Home with parents	1.085147 [.4148385 2.83856]	0.868
Off campus	1.453389 [.5555188 3.802461]	0.446
Hours spent online		
1-2	1.00 (Ref)	
3-4	2.125196 [1.031087 4.380289]	0.041

Over 5	2.364645 [1.144628 4.885033]	0.020
School		
Technology	1.00 (Ref)	
Humanities	.6749605 [.3614471 1.26041]	0.217
Health sciences	.5419773 [.2418083 1.214762]	0.137
Business	.4799831 [.2824863 .8155573]	0.007

Table 9. Logistic Regression relating Perpetration through Deception with Demographic Factors

The study, however, found no significant correlation between various demographic items and perpetration of cyberbullying through public humiliation, as presented in Table 10.

Factor	**OR (95% CI)**	**p-value**
Age category		
16-20 years	1.00 (Ref)	
21-25 years	1.255057 [.703487 2.239087]	0.740
26-30 years	.7353277 [.2725925 1.983572]	0.093
31 and above	.661338 [.2134477 2.049064]	0.305
Gender		
Female	1.00 (Ref)	
Male	1.14037 [.6917993 1.879799]	0.606
Year of study		
First	1.00 (Ref)	
Second	1.848586 [.9160811 3.730315]	0.086
Third	1.810816 [.8469384 3.871656]	0.126
Fourth	.4997617 [.1718696 1.453204]	0.203
Post-grad	.8364103 [.2930921 2.386902]	0.738
Where they live		
On campus	1.00 (ref)	
Home with parents	.5248503 [.1835585 1.500709]	0.229
Off campus	.8711171 [.3100292 2.447657]	0.794
Hours spent online		
1-2	1.00 (Ref)	
3-4	.9967246 [.4246774 2.339329]	0.994
Over 5	1.441334 [.6241818 3.328268]	0.392
School		
Technology	1.00 (Ref)	
Humanities	1.15068 [.575142 2.302151]	0.692
Health sciences	1.173016 [.4750948 2.896195]	0.729
Business	.945662 [.5138666 1.74029]	0.858

Table 10. Logistic Regression relating Perpetration through Public Humiliation with Demographic Factors

DISCUSSION

The purpose of this study was to make a contribution to the current body of knowledge on cyberbullying in institutions of higher learning in Africa. This was done by investigating the prevalence of cyberbullying in one of the universities within Nairobi, Kenya. The university's population, while comprised of students from different countries, is largely dominated by students from within Kenya. Accordingly, it reflects the dynamics one would find at any typical university in Kenya.

This study provides evidence that cyberbullying has found roots in institutions of higher learning in Kenya. From the sampled population, our study revealed that the highest form of victimization was through the act of deception, in which 75.8% indicated someone had lied to them electronically. On the

other hand, the highest form of perpetration of cyberbullying was through malice, in which 49.7% indicated that they had sent a rude message to someone electronically. This is based on responses from survey participants who had been victims or perpetrators of cyberbullying at least once. While the findings on perpetration levels appear to fall within the range of findings from other studies (10% - 40%), those on victimization appear higher in comparison to the majority of the findings from previous studies (Bauman & Baldasare, 2015; Doane, Kelly, & Pearson, 2016; Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Lee & Shin, 2017; Watts, Wagner, Velasquez, & Behrens, 2017; Kyobe, Mimbi, Nembandona, & Mtshazi, 2018). It is likely that the high levels in this study could be linked to lack of a clear framework to deal with cyberbullying within institutions of higher learning in Kenya and that the new cyber law in Kenya is yet to be popularized. Furthermore, it is worth highlighting here that while a large number of students in this university are Kenyans, there is a significant foreign student presence and influence. This could inhibit generalizability to the national situation with institutions made up of an overwhelmingly large local population.

However, as indicated previously in the literature section of this study, various studies on cyberbullying have registered variations owing to differences in demographics and the contexts within which such studies were conducted. In addition, the study findings corroborate a number of other studies which have observed equally that the prevalence rate of perpetration is normally lower than those of the victims (Bauman & Baldasare, 2015; Lee & Shin, 2017; Watts, Wagner, Velasquez, & Behrens, 2017).

This study did not find any significant correlation between victimization and the students' age category. However, a significant correlation was found between students' age category and perpetration of cyberbullying through the acts of unwanted contact. Students between the ages of 21 and 25 years were more likely to perpetrate acts of unwanted contact compared to their counterparts between the ages of 16 and 20. This finding appears to support those reported in several other countries such as Canada, China, Korea, and South Africa (Watts, Wagner, Velasquez, & Behrens, 2017; Lee & Shin, 2017; Kyobe, Oosterwyk, & Kabiawu, 2016).

Whereas this study did not find any significant correlation between gender and victimization, a significant correlation was found between gender and perpetration. In the study, male students were more likely to perpetrate acts of cyberbullying compared to their female counterparts. This too is in agreement with a number of studies that have documented such existence equally (Bauman & Baldasare, 2015; Brody & Vangelisti, 2017; Coelho, Sousa, Marchante, Brás, & Romão, 2016).

Those students who were in their 2nd and 3rd years of study were more likely to face cyberbullying through acts of public humiliation and malice compared to their 1st-year counterparts. These findings contradict those of Coelho, Sousa, Marchante, Brás, and Romão (2016), who report a decrease in cyberbullying behavior as students' progress in their years at school. However, we believe that 2nd- and 3rd-year students are more likely to be consumers of technology within campus than their 1st-year counterparts, hence, are more likely to engage in or be exposed to cyberbullying.

The students who spent more than five hours online daily were more likely to become victims of cyberbullying or perpetrate acts of cyberbullying compared to those who spent between 1-2 hours. This is due to increased exposure as a result of increased usage of technology. Previous studies have associated the amount of time spent online to the increased probability of experiencing cyberbullying (Bauman & Baldasare, 2015; Pearce & Rice, 2013; Barlett, Madison, Heath, & DeWitt, 2019).

Students who were from Schools of Humanities and Social Sciences and those from Health Sciences were more likely to experience cyberbullying compared to those from the School of Technology. This could be attributed to the fact that students from the School of Technology are more technologically

savvy compared to their counterparts from other schools. Consequently, it is expected that they would be more knowledgeable on how to keep themselves from technology-related exploitation than their counterparts.

CONCLUSIONS, LIMITATION AND FUTURE RESEARCH

The results of this study add to the limited yet growing body of literature on cyberbullying in Africa. The affirmation of the existence of cyberbullying in this study provides a strong justification about the need for more research into this area for the least researched countries. While the prevalence rate of cyberbullying reported in this study is reasonably comparable to those from other developed economies, and whereas much attention is already given on finding ways to address cyberbullying in developed economies, not much consideration has been given to dealing with cyberbullying in developing economies. For example, in Kenya, relevant legislation, such as the Computer and Cybercrime Bill, only became law in May 2018. Anecdotal evidence also reveals that most academic institutions of higher learning in Kenya do not have policies geared directly towards addressing matters related to cyberbullying.

It is imperative, therefore, that educational systems in Africa and developing economies establish frameworks to deal with the emerging reality of cyberbullying within institutions of higher learning. Such frameworks should facilitate the implementation of useful strategies to help victims of cyberbullying and at the same time offer deterrent mechanisms against the perpetration of cyberbullying. It would be useful if such frameworks are proactive as well as reactive in order to offer support and guidance to the students. Additionally, increased awareness on cyberbullying needs to be promoted, as the lack of it could potentially lead to sustained or increased incidence of cyberbullying among students, with devastating consequences. It is important for students to understand both the technology as well as the social ramifications of cyberbullying.

This research has limitations commonly found in exploratory case studies, such as the small sample size that resulted from use of one university. This may constrain the generalizability of the results. Further, choosing Kenya as the context of this study may equally affect generalizability of results. This is because different countries operate in different contexts. Notwithstanding these limitations, the findings from this study are relevant for laying the foundation upon which future studies could investigate other aspects of cyberbullying within developing economies.

This study would benefit from longitudinal research to determine how the prevalence and forms of cyberbullying evolve over time. Specifically, it would be interesting to determine the prevalence of cyberbullying in African high schools, and to compare such studies to those done at institutions of higher learning to help establish whether the prevalence rate grows or decreases as one moves to institutions of higher learning. Other studies are needed to understand the motivators of cyberbullying within the context of developing economies.

Finally, this study appeals for more attention on cross-cultural/country studies on cyberbullying. Our literature search did not find any such studies conducted between developed and developing economies. Findings from such studies would be instrumental in providing a deeper understanding of cyberbullying to the research community and practitioners.

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