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Technology-Facilitated Sexual Violence and Abuse in Low and Middle-Income Countries: A Scoping Review

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Abstract

Technology-facilitated sexual violence and abuse (TFSVA) is a pervasive phenomenon and a global problem. TFSVA refers to any form of sexual violence, exploitation, or harassment enacted through the misuse of digital technologies. This includes, but is not limited to, image-based sexual abuse, online sexual exploitation and harassment, sextortion, and the non-consensual sharing of sexual images. It has significant and long-lasting psychological, social, financial, and health impacts. TFSVA is on the rise, particularly in low and middle-income countries (LMICs), where there has been an explosion in digital technology overall. This scoping review aimed to identify studies on TFSVA in LMICs to examine its types, impacts, victim-survivor coping strategies, and help-seeking. To identify peer-reviewed literature, six databases were searched: Applied Social Sciences Index & Abstracts, ProQuest, PubMed, Scopus, Star Plus-University of Sheffield library search, and Web of Science. The review included empirical studies published in English between 1996 and 2022, focusing on TFSVA among adults (aged 18+) in LMICs. A total of 14 peer-reviewed studies were included, highlighting that scant empirical research is available on TFSVA in LMICs. This review found several types of TFSVA and their wide-ranging impacts; traditional patriarchal societal norms and values largely shape TFSVA for women in LMICs. It also found more social impacts linked to sociocultural factors. Survivors adopted various coping mechanisms and help-seeking behaviors primarily through informal family support. Studies highlighted the need for effective legislation; pro-victim-survivor policing; strong family support; increasing victim-survivors' knowledge about reporting; and more research.

Keywords

online sexual harassment, cyber abuse, image-based sexual abuse, LMICs, technology-facilitated sexual abuse, technology-facilitated sexual violence

Introduction

Technology-facilitated sexual violence and abuse (TFSVA) is a pervasive phenomenon, and global public health and social concern, found not only in the developed world but also in the Global South (Bailey et al., 2021; Zagloul et al., 2022). The rapid proliferation of technology, including the internet and mobile devices, and increased dependence on technology during and following the coronavirus disease 2019 (COVID-19) global pandemic (Huiskes et al., 2022; Jatmiko et al., 2020) has led to increased opportunities for and prevalence of online sexual violence, abuse, and harassment worldwide (Bailey et al., 2021; Makinde et al., 2021; Powell et al., 2020; Salerno-Ferraro et al., 2022; Snaychuk & O'Neill, 2020). This is particularly significant in low and middle-income countries (LMICs), where access to digital technologies is growing faster than in other parts of the world (ITU, 2019; Pew Research Centre, 2019). Indeed, internet use in the least developing countries is growing at an annual growth rat of 22 per cent, which is much faster than global growth rate of 7.2 percent (ITU, 2023). This rapid expansion of the internet and digital technologies offers more opportunities to use these as a tool or platform for perpetrating sexual violence, abuse, and harassment in countries where gender inequality and sexual violence against women are already high due to long-traditional patriarchal practices, inadequate social support, and a lack of economic opportunities (Carrington et al., 2015; DeKeseredy & Hall-Sanchez,

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2018; Jakobsen, 2018). For this review, the World Bank's (2023) definition of LMICs has been adopted, meaning countries with a Gross National Income (GNI) per capita between US$1,085 (or less than US$1,085) and US$13,205 are defined as LMICs. The World Bank further divides LMICs into two categories: lower-middle-income countries, with a GNI per capita between US$1,086 and US$4,255, and upper-middle-income countries, with a GNI per capita between US$4,256 and US$13,205. There are 136 countries in these categories.

Digital technologies refer to devices such as personal computers, tablets, mobile telephones, and cameras, as well as systems such as software, apps, virtual reality and less tangible forms of technology such as the internet and social media. The misuse of digital technologies is exemplified in diverse behaviors including through the use of social media, artificial intelligence (AI) (Flynn, 2019; Henry et al., 2018), GPS tracking (Wong, 2019), mobile phones and smart home technology (Buil-Gil et al., 2023). There are numerous examples of TFSVA, including: sending unwanted sexually explicit photos, emails, or texts; harassment through repeated requests for dating or physical relationships; sending, taking, sharing or threatening to share intimate images or videos; monitoring and tracking an individual's location, social media and internet activities; restricting access to or ownership of digital devices through coercive control; threatening or non-consensually disclosing personal information (known as doxing, or doxxing).

Many of these behaviors are grouped together and commonly referred to as TFSVA; this is the umbrella term we adopt in this paper. However, there is no agreed terminology or definition among scholars who study TFSVA; instead, a diverse range of concepts and definitions are found across the literature (Backe et al., 2018; Henry et al., 2020; Henry & Powell, 2018; Patel & Roesch, 2022; Powell et al., 2020). This lack of uniformity makes it harder to assess the prevalence and effects of these behaviors (Snaychuk & O'Neill, 2020). It also complicates the development of appropriate legislation and interventions to prevent or combat its harm (Patel & Roesch, 2022).

Understanding and investigating TFSVA has become increasingly important because of its rapid expansion. According to a study conducted by the Economist Intelligence Unit (2021), globally, the overall prevalence of online violence against women is 85%. This study also found regional differences in the prevalence of online violence against women, including 90% in Africa; 88% in Asia Pacific; 98% in the Middle East; 74% in Europe; 76% in North America; and 91% in Latin America and the Caribbean. Regional and country-based studies also reveal the prevalent nature of this problem. For example, UN Women's (2021) multi-country study on Arab states (22 countries) showed that 60% of women experienced online violence in the past year, and 16% of women experienced online violence at least once in their lifetime. Another multi-country study based on the Asia region (five countries) conducted by UN Women (2020) illustrates that online violence against women is widely prevalent with different manifestations. A study conducted by Internet Without Borders (2019) based on seventeen central and West African countries found that 45.5% of adult women (18–45 years) experienced online gender-based violence (GBV) while using social media. A meta-analysis and systematic review on the prevalence of TFSV (based on a narrow definition of TFSV as the creation, distribution and threats to share intimate images of videos) conducted by Patel and Roesch (2022) revealed pool prevalence of TFSV victimization as 8.8% of people (both male and female) reported to having their image or video-based sexts distributed without permission, 7.2% had been threatened with sexting sharing, and 17.6% have had their image taken without consent.

The prevalence of TFSVA is also reflected in the growth of scholarship on TFSVA. However, most global research and evidence synthesis includes studies only in developed or high-income countries (see, e.g., Afrouz, 2021; Rogers et al., 2022; Filice et al., 2022; Patel & Roesch, 2022). Yet as the digital landscape rapidly expands in LMIC, and for some countries this has been more rapid than in high-income ones, research lags behind the Western world. Yet, a recently published meta-analysis and systematic review on sexual violence in LMICs indicated that women experience a higher prevalence than men (Ranganathan et al., 2021). This review highlighted the lack of a robust evidence base as prevalence ranged widely from 14.5% to 98.8%, and it was noted that due to the ambiguity of definition, it is difficult to measure among the studies (Ranganathan et al., 2021). Research has also revealed that the consequences of sexual violence are serious and complex in LMICs (Hardt et al., 2022). Importantly, Hardt et al.'s (2022) study found that impacts vary across LMIC settings and are influenced by contextual and socio-cultural factors. Clearly, a more sophisticated and nuanced understanding of the types, impacts, and victim-survivors' responses to TFSVA in LMICs is needed.

A recently published scoping review on technology-facilitated GBV (Gender-based violence) in LMIC across the Asia Pacific region found various manifestations of technology-facilitated GBV while noting that an accurate picture of the prevalence of this victimization remains unclear or unknown due to widespread under-reporting (Bansal et al., 2023). Our scoping reviews build upon what was done by Bansal et al., as they only included low- and middle-income countries in the Asia Pacific region, whereas we have included all LMICs from any continent. In addition, Bansal et al. (2023) only summarized the forms, tactics, and prevalence of technology-facilitated GBV. In contrast, this review examined the types of TFSVA, its impacts, and victim-survivors' help-seeking responses, alongside a consideration of the impact of different cultural contexts in LMICs.

Table 1. Inclusion and Exclusion Criteria.

Criteria	Inclusion	Exclusion
Participants	Victim-survivors of technology-facilitated sexual violence and abuse (TFSVA); adult women aged 18+.	Participants aged below 18 years. If the minimum age of the participants was not explicitly mentioned in the study.
Concept	TFSVA (any act of sexual harassment and abuse perpetrated or facilitated by digital tools and technologies).	Other misuses of technology such as identity hacking and prank call with no sexual or intimate focus.
Context	Low and middle-income countries.	Higher-income countries.
Types of evidence sources	1. Primary original research and case studies published in peer-reviewed journals. 2. Peer-reviewed conference paper based on primary research. 3. Book chapters based on primary research.	Systematic reviews, scoping reviews, opinion letters, non-empirical research reports, conference papers or proceedings.
Language	English only (translation resources were unavailable for this project).	Papers in any language other than English
Date	From 1996 to November 2022.	Published before 1996.

Aims and Research Questions

The primary aim of the review is to identify and synthesize studies regarding TFSVA perpetrated against women aged 18+, as they are the most frequent victims (Powell and Henry, 2019; Henry et al., 2020; EU/FRA, 2014), in LMICs. The scoping review questions are:

1. What is known about victimization and perpetration of TFSVA against adult women in LMICs?
2. What are the impacts of TFSVA on adult women victim-survivors in LMICs?
3. What are the help-seeking practices of adult women victim-survivors of TFSVA in LMICs?

Method

This study employed a scoping review methodology. It is a transparent and growing methodology, which has value in addressing a broad range of research questions and identifying evidence gaps (Arksey & O'Malley, 2005). We adopted the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines for this review (Tricco et al., 2018). The review protocol was registered at the Open Science Framework on 06/05/2022 [https://osf.io/58x43/].

Search Strategy and Selection Criteria

In November 2022, the search took place in the following databases: Scopus, Web of Science, ProQuest, PubMed, Applied Social Sciences Index & Abstracts, and the University of Sheffield library (Star Plus). Two search strings were used to capture the wide range of TFSVA; string one ("technology-facilitated sexual violence" OR "technology-facilitated abuse" OR "technology-facilitated intimate partner violence" OR "technology-facilitated domestic violence" OR "technology-facilitated domestic abuse" OR "technology-facilitated gender-based violence" OR "technology-facilitated coercive control") and string two ("online gender-based violence" OR "online harassment" OR "digital harassment" OR "cyber violence" OR "image-based abuse" OR "Non-consensual intimate image sharing" OR "ICT-based harassment"). The search string used was the names of all LMICs as defined by the World Bank's (2023) classification. This method has been used in evidence reviews with a contextual focus on LMICs (see, e.g., Hardt et al., 2022).

To capture additional research on this topic, Google Scholar was searched using the terms "technology-facilitated violence and abuse" OR "cyber harassment and abuse" OR "online gender-based violence." The first 500 items returned were checked for additional relevant articles not found by the main searchers. Some websites were searched manually to capture more studies, such as UN Women, the Cybercrime Foundation, the Worldwide Foundation, ANROWS (Australia's National Research Organization for Women's), and GenderIT. We only included studies available in written English, published between January 1996 to November 2022, based in LMICs. Any empirical studies that included respondents below 18 years old and did not clearly indicate the respondents' minimum age were not considered for the review. Details of Inclusion and exclusion criteria are shown in Table 1.

Study Selection and Data Extraction

Our initial search identified 1,617 studies from six databases. All were imported into EndNoteX9 from each database and other sources. After removing duplicates, there were 1,040
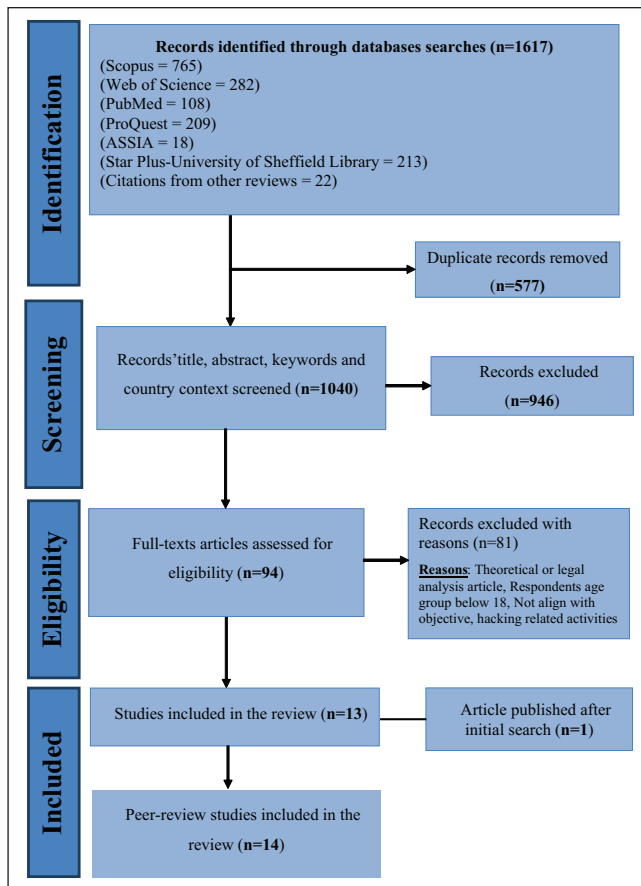
Figure 1. Preferred Reporting Items for Systematic Reviews flowchart.

papers for screening. All the papers were primarily screened, with 946 removed based on the title, abstracts, and context (LMICs or Non-LMICs) screening. The reference lists of several review articles were searched manually, and we completed backward and forward citation chaining as a means of finding related documents.

We imported all 94 remaining studies (see Figure 1), which were then subjected to a full-text reading. Of these, 81 studies were excluded: 33 studies were not primary research; 24 did not contain relevant information; 12 were based on the age group (included those below 18 years) of the population; six studies contained only hacking-related content; six studies were rejected based on context (not based in LMICs). At this stage, one further study was published, that met the inclusion criteria. A total of 14 studies were included in the review. Study details were collated in an extraction table (see Table 2 for a summary of studies) using Microsoft excel and the following categories: author(s); year of publication; origin/country of origin; aims/purpose; population and sample size within the source of evidence (if applicable); methodology/methods; key findings that relate to the scoping review questions. The findings of the included studies were entered

into NVIVO (Qualitative data analysis software produced by Lumivero, version 12) for analysis and synthesis. Initially, two team members independently screened each article based on its title and abstract; subsequently, a third team member (who is not the author, but whose support is acknowledged in the acknowledgement section) who did not participate in the initial screening of titles and abstracts was available to resolve all screening conflicts. The full texts of peer-reviewed articles that met inclusion criteria during the title-abstract screening stage were obtained for review, and any conflicts that arose during the full-text screening stage were resolved collectively by the two researchers. If a study included both men and women, where the team was able to extract data on women only, we included the study.

Description of Included Studies

Six were from South Asia, two were from Southeast Asia, three were from Middle Eastern countries and North-West Africa, one was from South America, one was from Sub-Saharan Africa, and one was from Turkey. Eight studies adopted qualitative methods, three quantitative methods, and three mixed methods.

Results

Definitional Ambiguity Relating to TFSVA in LMICS

While all included studies acknowledged that acts of TFSVA are pervasive and harmful, replicating the wider global literature, there was a lack of agreed definition and clarity regarding specific behaviors, context, and nature. We found ten different terms or concepts used in the selected peer-reviewed studies, including: online harassment (OH) ($n=4$); online sexual harassment ($n=2$); online GBV ($n=1$); digital or online abuse ($n=1$); cyber violence (CV) ($n=2$); cyber aggression ($n=1$); technology-facilitated sexual violence ($n=1$); technology-facilitated violence and abuse ($n=1$); non-consensual sharing of intimate images ($n=1$); and electronic dating violence (EDV) or digital dating violence ($n=1$). Only six studies gave a clear definition of the term they used. Most studies investigated TFSVA in its broadest sense, and only two studies focused on specific behaviors: EDV (Alsawalqa, 2021) and non-consensual sharing of intimate images (França & Quevedo, 2020).

Definitions of TFSVA ranged from broad statements or grouping harmful behaviors as a form of violence (e.g., cyber abuse) to explicit behaviors (e.g., sextortion). Some studies used different terms to indicate the same behavior; nearly half of the studies used online/cyber/digital abuse/violence, or referred to TFSVA (Demir & Ayhan, 2022; Hassan et al., 2020; Jatmiko et al., 2020; Koirala, 2020; Kundu & Bhuiyan,

Table 2. Summary of the Included Studies.

	Authors, Year of publication, Country	Aims and Objectives	Sample Size, Age, and Gender	Study Design, Data Collection Method, and Data Analysis	Key Findings/Themes
1	Zagloul et al. (2022), Egypt	To explore Technology-facilitated sexual violence and abuse (TFSVA) and related factors among working & non-working Egyptian women before and during coronavirus disease 2019	563 women aged between 18 and 60 years	Quantitative (online survey). SPSS (statistical software developed by IBM) used for data analysis.	There is a relationship between socio-demographic background and digital harassment, platforms, perpetrators and the reporting behavior of victims.
2	Demir and Ayhan (2022), Turkey	To determine the dimensions of online harassment (OH) among Turkish female sports journalists and coping strategies	1,007 comments in 374 Twitter posts from 10 female Journalists	Qualitative (content analysis). NVivo for data analysis.	Twitter posts contained sexual and emotional harassment, physical threats and misogynist hegemonic culture in the workplace; and gender-based offensive and insulting comments.
3	Tandoc et al. (2021), Philippines	To explore Filipino female journalists' experiences of OH and their coping strategies.	Eight Female Filipino Journalists	Qualitative in-depth online interviews. Thematic analysis based on grounded theory.	OH against female journalists follows a "systematic process"; with multiple levels of impacts and explored coping strategies and sources of support of female journalists.
4	Sultana et al. (2021), Bangladesh	To know the nature of online gender harassment (OGH) among Bangladeshi women and identify victims' resistant strategies to OGH.	128 female Facebook users aged 18 and above, three male police and three male Facebook users	Mixed-method: (online survey and semi-structured interview). Python and thematic analysis approaches used for analysis.	The survey reports different types of OH, the identities of the perpetrators, and existing socio-legal support for the victims. Interviews explored various resistance strategies (e.g., ignore and block, report to platforms) and motivation to expose harassers online among victims of OH.
5	Sarkar and Rajan (2021), India	To understand how Indian adult women conceptualize cyber violence (CV) and how victim-survivors respond to CV.	30 adult Indian women, aged 19–35 years.	Qualitative. Thematic analysis was used to analyze the data using NVivo.	Explored the extent of CV among Indian women, positioning CV as an extension of physical violence and gender-based violence (GBV), the impact of CV and the feeling of omnipresence, barriers to help-seeking and disclosure, and ways of gender-blaming in the context of CV.
6	Makinde et al. (2021), 19 Sub-Saharan African countries	To investigate types of technology-facilitated violence and abuse among young African adults and coping strategies by the victims-survivors.	389 young adults aged 18–34 years	Quantitative (Online survey). "R" was used to analyze the data.	The survey looked at how often and what kinds of TFVA young adults experienced. It also found different ways to deal with TFVA.
7	Alsawalqa (2021), Jordan	To examine the experiences and impacts of electronic dating violence (EDV) among Jordanian females and coping strategies for EDV.	104 Female university students aged 18 years and above	Qualitative (semi-structured interviews). The data were analyzed thematically	Explored the societal context of EDV against women in Jordan, motivations of the perpetrators, and impacts of EDV (psychological, emotional, behavioral), and revealed how victim-survivors cope with this victimization through different mechanisms.

Table 2. (continued)

	Authors, Year of publication, Country	Aims and Objectives	Sample Size, Age, and Gender	Study Design, Data Collection Method, and Data Analysis	Key Findings/Themes
8	Kundu and Bhuiyan (2021), Bangladesh	To explore the forms and nature of OH and its impact on the freedom of expression of victims-survivors	4,013 YouTube and Facebook comments. 5 female journalists aged 18 and above.	Qualitative (content analysis and in-depth interview). Thematic analysis and the case narrative were used to analyze the data.	YouTube and Facebook comments were analyzed to understand OH against women journalists. Interviews explored the consequences of OH and victims-survivors' responses to harassment.
9	Koirala (2020), Nepal	To examine the nature and impact of OH among female journalists and to explore how to respond to it.	48 female journalists. 21 years and above	Qualitative (In-depth interview).	Qualitative data explored various types of OH female journalists experienced, platforms and perpetrators of OH, which age group suffered more OH, and how OH affected female journalists (personal and professional levels) and victim-survivors coping strategies to combat it.
10	Jatmiko et al. (2020), Indonesia	To explore the online GBV among Indonesian young adult women	4 young Indonesian females aged 18–23 years	Qualitative (semi-structured interviews). Data analyzed thematically.	Explores the nature and types of online-based sexual violence among women with detailed narrating, and it also establishes a link between dromology and sexual violence online.
11	Hassan et al. (2020), Egypt	To explore the prevalence, types, and impacts of CV against women in Egypt and victims' responses to CV.	356 adult females aged 18 years and above	Quantitative (Online survey). SPSS used for data analysis	Survey data reveals the prevalence and types of CV victimization among females, the impact of CV (psychological, social, and physical), victim survivors, and the community response to CV victimization.
12	França and Quevedo (2020), Brazil	To explore the experiences of non-consensual sharing of intimate images among Brazilian adults	141 Brazilian adults aged 18 years and above	Qualitative (open-ended questionnaire). Narrative analysis approach used for data analysis.	Qualitative data explores many themes, including the identity of perpetrators, the vulnerability of consent for taking or sending intimate images, the platforms where intimate images leaked, the motivation of offenders, the consequences of non-consensual leaking, and the coping strategies of the victim-survivors.
13	Sambasivan et al. (2019), South Asia (India, Bangladesh, and Pakistan)	To explore the pattern and impact of gender and digital abuse among south Asian adult women and victims' coping mechanisms for online abuse.	199 women, aged 18–65, and 6 NGO staff members	Qualitative (Semi-structured interview and focus group discussion.) Data were analyzed thematically	Participants reported on the types of online abuse, the platforms and mechanisms of abuse, the detailed impact of online abuse, and the coping strategies they adopted to respond to digital abuse.
14	Musharraf and Anis-ul-Haque (2018), Pakistan	To examine the impact of cyber aggression and cyber victimization on the mental health and well-being.	508 Pakistani young adults aged 18–25 years.	Quantitative (sample survey)	The survey found a strong and significant positive correlation between cyberaggression, victimization, and poor mental health, and it also negatively correlated with well-being.

TFVA = Technology-facilitated violence and abuse; NGO = Non-government organizations

2020; Sultana et al., 2021; Tandoc et al., 2021). One study used the term non-consensual sharing of intimate images as an alternative to "revenge porn" to refer to any non-consensual sharing of intimate images by strangers or intimate persons (França & Quevedo, 2020).

Types and Patterns of TFSVA in LMICs

There were seven themes in the categories of TFSVA: online/digital sexual harassment; image-based sexual abuse (IBSA); impersonation/doxing; hate speech, trolling, and meme violence; physical and rape threats; coercive control; and monitoring through digital technologies. It is important to note that there are overlaps between these categories; they are not mutually exclusive.

Online/Digital Sexual Harassment. Several studies included in the review showed that women in LMICs experience digital or online sexual harassment in different ways (Demir & Ayhan, 2022; Hassan et al., 2020; Koirala, 2020; Makinde et al., 2021; Sambasivan et al., 2019; Sarkar & Rajan, 2021; Sultana et al., 2021; Tandoc et al., 2021; Zagloul et al., 2022). Digital/online sexual harassment included: unexpected/unwanted sexually explicit photos, emails, comments, videos, links, or text messages; repeatedly unwanted sexual requests via social networking sites, emails, text messages, or phone calls; publicly posting online sexual or offensive comments; posting personal details in social media or online stating that the person is available for sex or to date. Sarkar and Rajan (2021) found that women who voiced their opinion regarding socio-cultural structures and the objectification of women in the media experienced online sexual harassment as punishment.

Image-Based Sexual Abuse. The non-consensual taking, sharing, or threats to share personal, intimate images or videos were reported in most of the included studies, highlighting how IBSA is used to blackmail, humiliate, or perpetrate emotional abuse (França & Quevedo, 2020; Hassan et al., 2020; Jatmiko et al., 2020; Makinde et al., 2021; Sarkar & Rajan, 2021; Zagloul et al., 2022). A study conducted by Zagloul et al. (2022) of Egyptian women ($n=563$) found that more than half (51.9%) of study participants experienced non-consensual pornography. Women survivors shared their experiences of facing threats or blackmail from current or former partners to share their intimate images or videos online (França & Quevedo, 2020; Sarkar & Rajan, 2021). In many cases, these intimate images or videos were taken with permission in the relationship, but often coercively as "proof of love" or "proof of trust" (França & Quevedo, 2020) and later blackmailed the victim-survivors into sending further photos or videos or into continuing the relationship. Intimate material was shared publicly on the internet or sometimes in a closed group. This type of harassment and abuse was also conducted by known persons, office colleagues, friends, and even family members. A study conducted by Jatmiko et al. (2020) of Indonesian women found that fictitious agencies during COVID-19 were engaged in illegal activities of spreading intimate photos online without consent. Similarly, women in South Asian countries faced deepfake harassment reported in a study by Sambasivan et al. (2019). Deepfakes are synthetic media in which a person in an existing image or video (often sexual in nature) is replaced with someone else's likeness. Sambasivan et al. (2019) found that 6% of the study participants ($n=199$) reported that they experienced this as their photos had been superimposed or manipulated in this way and shared through social media.

Gender-Based Hate Speech, Trolling, and/or Memes Harassment. Online gender-based hate speech directed at women in LMICs was reported in several studies and ranged from misogynist, humiliating, or insulting comments, body shaming, or comments about physical appearance or dress, to religious and/or caste-based name-calling (e.g., Satan, loose character, atheist), public shaming or trolling, and harassment through the use of memes (Demir & Ayhan, 2022; Koirala, 2020; Kundu & Bhuiyan, 2021; Sultana et al.,2021; Tandoc et al., 2021; Zagloul et al., 2022). A meme is an image, video, or piece of text that is intended to be sexually-humorous and which is copied and spread rapidly by internet users, often with slight variations. This form of harassment can be organized or initiated by people in power (e.g., politicians and government officials) (Tandoc et al., 2021). For example, in Turkey, female sports journalists reported experiencing derogatory comments about their physical appearance on social media orchestrated by their seniors (Demir & Ayhan, 2022).

Kundu and Bhuiyan's (2021) study found that around half of the comments (49%) toward female journalists in Bangladesh are misogynist, with 17% categorized as a religious "tag," for example, calling a woman "Satan": a figure commonly associated with evil or malevolence in many religions and belief systems, particularly in Christianity, Islam, and Judaism. It is seen as the objectification of a hostile, destructive force in Islam. Sultana et al. (2021) found that 19 women ($n=91$) in their study reported that religious tags or sentiments were used to harass them online.

Impersonation, Doxing, and Defamation. A common finding reported in the studies was using digital technologies to create malicious profiles or fake identities in social media and using or stealing victim-survivors' information or photos without permission (Hassan et al., 2020; Sambasivan et al., 2019; Tandoc et al., 2021). Abusers copied victim-survivors' identities or personal information to create false, malicious, humiliating or sexually revealing profiles on social media, and in most cases, victim-survivors were unaware of these profiles.

Another abuse reported in the studies involved the disclosure of private information (e.g., address or phone number), chat or telephone records on social networking sites, a behavior called doxing (or doxxing) (Sambasivan et al., 2019). A South Asian study by Sambasivan et al. (2019) found that 14% of study participants experienced defamation through the creation of fake identities on social media, and Hassan et al.'s study (2020) found that 10% of women ($n=356$) reported being exposed to defamatory information in social media, with 6% reporting that their private data were accessed and disseminated online without consent.

Physical and/or Rape Threats. Several studies included in the reviews, found that women in the LMICs can face physical harm threats and rape threats through digital technologies, including via phone calls, messaging apps, and social networking sites (Demir & Ayhan, 2022; Koirala, 2020; Kundu & Bhuiyan, 2021; Sambasivan et al., 2019; Sarkar & Rajan, 2021; Tandoc et al., 2021; Zagloul et al., 2022). More than 4% of female respondents (total $n=148$) in the study conducted by Hassan et al. (2020) reported that they faced threats of physical or sexual violence online. This threat sometimes includes the threat of kidnap, killing, or murder (Sambasivan et al., 2019).

Physical threats were mostly found among women who were in the public eye; for example, those working as journalists, bloggers, or women representing women's rights in social media (Demir & Ayhan, 2022; Koirala, 2020; Kundu & Bhuiyan, 2021; Sarkar & Rajan, 2021; Tandoc et al., 2021). Kundu and Bhuiyan's study (2021) found that 5% of social media comments on women journalists' social media accounts are related to threats of rape or sexual humiliation, and 1.5% of comments are related to the threat of killing. A study conducted by Demir and Ayhan (2022) revealed that this type of physical threat is on the rise, particularly among female journalists working in Turkey.

Coercive Control. Another finding was the use of digital tools and technologies in coercive controlling behavior. Coercive control is typically perpetrated by abusive intimate partners, romantic partners, or lovers, (Stark, 2007). Coercive control is an act or a pattern of acts of assault, threats, humiliation, intimidation, or other abuse that is used to harm, punish, or frighten their victim (Stark, 2007). It is designed to make a person dependent by isolating them from others. Online coercive control was enacted through: online stalking, monitoring movements or activities; secretly recording intimate moments; accessing social media or online accounts without permission; the threat of leaking personal information/photos/videos without permission; and threats of sharing intimate images or videos. A qualitative study in India (Sarkar & Rajan, 2021) described how intimate partners used technology as a means of threat for coercive sex and taking intimate photos.

Monitoring Through Digital Technologies. Some studies found that women were being monitored or their activities tracked through digital tools and technologies (Hassan et al., 2020; Makinde et al., 2021). An online survey of Egyptian women found that 1 in 10 (11.5%, total $n=148$) reported that their online and offline activities were monitored or tracked, 6% said that their private data and/or photos were accessed and spread without permission and 5% reported that their movements were tracked (Hassan et al., 2020). Makinde et al.'s (2021) study found that in one in five Sub-Saharan countries women said that someone had gained access to their online/ email accounts without permission.

Mode and Platforms of Perpetration

Most of the studies in the review revealed that there were several platforms and means of perpetrating TFSVA, including the misuse of social networking sites, dating sites, blogging, mobile calls, SMS, personal online platforms, websites, GPS, emails and other communication technologies. However, no study found evidence of the use of more sophisticated technology, such as AI or drone technology. Among the diverse range of social networking sites and social media, Facebook, Messenger app, WhatsApp, Instagram, and Twitter were the most cited platforms where TFSVA took place (Demir & Ayhan, 2022; França & Quevedo, 2020; Hassan et al., 2020; Jatmiko et al.,2020; Koirala, 2020; Kundu & Bhuiyan, 2021; Makinde et al., 2021; Sultana et al., 2021; Zagloul et al., 2022). In some studies, perpetrators used porn websites to share intimate images (França & Quevedo, 2020), while most harassment was private in nature as a large number of victims experienced this via personal messaging apps, such as WhatsApp (Koirala, 2020).

Identity and Motivation of Perpetrators

Studies described a diverse range of perpetrator identities, including victim-survivors' current romantic partner, ex-partners, friends, friends of friends, virtual friends, classmates, relatives, stepfathers, neighbors, managers, and co-workers. A study by França and Quevedo (2020) found that 81% of Brazilian women (total $n=141$) who had experienced the non-consensual sharing of intimate images knew the perpetrator's identity. In another study, female journalists identified their harasser as a manager or senior officer (Koirala, 2020). However, most studies described that the perpetrator was unknown or unidentified to survivors (Hassan et al., 2020; Koirala, 2020; Sultana et al., 2021; Zagloul et al., 2022).

A wide range of factors appeared to motivate perpetrators to inflict TFSVA, including for monetary gain or extortion, blackmail, threat, sexual exploitation, equipment invasion, desire for revenge, jealousy, political agenda or support,

anonymity, gender-blaming culture, hegemonic masculinity, and ideological agendas, maintaining a patriarchal dominant power structure (Alsawalqa, 2021; Demir & Ayhan, 2022; Franca & Quevedo, 2020; Hassan et al., 2020; Jatmiko et al.,2020; Koirala, 2020; Kundu & Bhuiyan, 2021; Sambasivan et al., 2019; Sarkar & Rajan, 2021; Sultana et al.,2021; Tandoc et al., 2021).

Impacts of TFVA

Studies reported a wide range of impacts that victims-survivors experienced during and after TFSVA on a personal, family, and professional basis. Some were minor, while others were described as more serious and, in some cases, long-lasting. There were five main impacts: psychological and emotional; social; behavioral; financial; and physical harm.

Psychological and Emotional Impacts. A number of studies depicted how victim-survivors had experienced psychological or emotional harm due to TFSVA (Alsawalqa, 2021; Demir & Ayhan, 2022; Franca & Quevedo, 2020; Hassan et al., 2020; Jatmiko et al., 2020; Koirala, 2020; Kundu & Bhuiyan, 2021; Musharraf & Anis-ul-Haque, 2018; Sambasivan et al., 2019; Tandoc et al., 2021). Psychological and emotional consequences varied and short-term impacts were described as: anger; stress; anxiety; distress; fear; insecurity; low self-esteem; loss of confidence; confusion/hesitation; disbelief; and guilt. Long-term impacts include suicidal thoughts; shame; post-traumatic stress disorder; and feelings of isolation (Alsawalqa, 2021; França & Quevedo, 2020; Hassan et al., 2020; Koirala, 2020).

A study in Brazil found that one in three victim-survivors of non-consensual sharing of intimate images experienced post-traumatic stress disorder (França & Quevedo, 2020). Victim-survivors of TFSVA also showed a sense of helplessness, emotional burnout, and self-guilt (Alsawalqa, 2021; Sambasivan et al., 2019). In one study, women, particularly female journalists, tended to think that TFSVA is an unavoidable part of their job; they reported feeling helpless (Kundu & Bhiyan, 2021).

Social Impacts. A number of studies described how women in LMICs experience the social impacts of TFVA, including: withdrawal from virtual social life and the virtual public sphere; low academic performance; social isolation; reduced social media activities and use of digital technologies; leaving educational institutions; moving home; harassment in public places humiliation; and the reputational damage of victim-survivor (Alsawalqa, 2021; Demir & Ayhan, 2022; França & Quevedo, 2020; Hassan et al., 2020; Koirala 2020; Sarkar & Rajan, 2023).

Jatmiko et al.'s (2020) study described how online sexual harassment imposed "self-censorship" on victim-survivors and a "new-self" emerged, changing the way of interacting online and in everyday life. A South Asian study conducted by Sambasivan et al. (2019) found reputational damage, including adverse social gossip resulting in a loss of arranged marriage opportunities. Such reputational damage was rooted in the suspicion of a woman's complicity (due to presumed sexual and premarital relations, considered taboo for most women). In this study, women, particularly from minority communities and those with disabilities, were most vulnerable to threats of coercive sexual or romantic relationships (Sambasivan et al., 2019).

Financial Impact. Three studies included in the review found that victim-survivors had experienced financial consequences of TFSVA (França & Quevedo, 2020; Hassan et al., 2020; Kundu & Bhuiyan, 2021). This included loss of employment, difficulty in getting a new job, hampering or restricting professional activities, and spending money for treatment (psychological harm or illness). França and Quevedo (2020) found in their sample of 141 that 6% of the victim-survivors of non-consensual sharing of intimate images had lost their job, and 5% said they faced difficulties finding a new jobs after victimization. Another study found that 16% (total $n = 141$) of victims-survivors spent money on counseling or psychiatric treatment to address the impact of their experiences of TFSVA (França & Quevedo, 2020).

Behavioral Impacts. Several impacts have been found in the studies included in the reviews, including aggressive behavior, eating disorders, heavy smoking, and violence. For example, Alsawalqa (2021) found that behavioral consequences associated with the victim-survivor's trauma included eating disorders. It also found that victim-survivors of online dating violence experienced changed behavioral patterns, such as new violent or aggressive behaviors with people around them.

Physical Harm. Three studies explored the physical impact of TFSVA victimization, including sleeping problems, diet changes, unexplained weight loss, and transient tachycardia (Alsawalqa, 2021; Hassan et al., 2020; Sambasivan et al., 2019). Hassan et al.'s (2020) study found that 4.1% of women ($n = 148$) were exposed to physical consequences due to CV. In Alsawalqa's (2021) study, victims-survivors of EDV suffered different stress-related physical ailments, including shortness of breath, fainting, and sleeping problems.

Coping Strategies and Help-seeking Behavior

Women across the studies demonstrated different coping strategies following TFSVA including: staying silent; taking no action; taking risk-reducing strategies; limiting or disconnecting themselves from virtual life; taking the informal route of help-seeking; or reporting through the professional and formal way. These actions, or non-actions, are directly or indirectly, related to different issues, including cultural context, availability of family or professional support, fear of physical harm through repercussions, and awareness about TFSVA and reporting.

Individual Responses to TFSVA. A wide range of individual actions were identified as victim-survivors disconnected or disengaged themselves from virtual life through: disabling, deleting or changing social media profiles or phone numbers; or ceasing to use the internet (Alsawalqa, 2021;Hassan et al., 2020; Makinde et al., 2021). They also imposed some "self-censoring" strategies to minimize or reduce the risk of being harassed by limiting using social media and the internet (e.g., posting fewer photos, videos, and comments), removing personal photos or using non-face photos in social media (Koirala, 2020; Kundu & Bhuiyan, 2021; Sambasivan et al., 2019; Tandoc et al., 2021). Victim-survivors also took some direct action: for example, blocking offenders from their contact lists or in a device or app or even confronting the offender requesting that they stop (Alsawalqa, 2021; Hassan et al., 2020; Makinde et al., 2021; Sambasivan et al., 2019; Sultana et al., 2021). More than 72% of respondents (n=148) in a study by Hassan et al. (2020) reported blocking the offender as a response to TFSVA.

Several studies found that in addition to the above actions, victim-survivors also take a strategy of "ignoring the harasser or harassment" or developing a "thick skin" to consider this type of harassment as a part of women's everyday lives (França & Quevedo, 2020; Koirala, 2020; Kundu & Bhuiyan, 2021; Sultana et al., 2021; Tandoc et al., 2021). Sometimes this strategy of ignoring the abuse was imposed by the higher authority or family members (Hassan et al., 2020; Koirala, 2020). Alsawalqa (2021) found that some victim-survivors utilized self-distraction strategies to cope with victimization, for example, exercising, shopping, sleeping more than usual, even taking sedative pills, and consulting with doctors. Makinde et al.'s (2021) study found that 5% of the respondents (n=389) attended a counseling session with close associates (family members, friends, classmates, or clergy persons). The same study also found that some respondents reported that they adopted a strategy of apologizing to their social media friends stating that their accounts had been hacked.

Informal Channels of Help-seeking. Seeking support from family members, friends, and other close ones were the most commonly reported sources of support (Makinde et al., 2021; Sambasivan et al., 2019). Sambasivan et al.'s (2019) study found that 47% of victim-survivors (n=199) disclosed incidents to family members or friends. Studies by Alsawalqa (2021) and Sambasivan et al., (2019) found that survivors used the perpetrator's friends or someone else who had mutual trust to convince the offender to remove disseminated photos from social media.

Professional and/or Formal Channels of Help-seeking. Studies show that women survivors of TFSVA in the LMICs do not like to report incidents to formal channels. Several studies found that victim-survivors did not report their experiences to the police (Koirala, 2020; Makinde et al., 2021; Sambasivan et al., 2019). In contrast, a study by Zagloul et al. (2022), found a small number, 3.9% of respondents (n=283), reported the incident to the police. However, survivors who reported the incident also noted that they preferred to keep it secret (Alsawalqa, 2021). The reasons given for the lower frequency of reporting to the police included family pressure, fear of re-victimization, negative attitudes toward law enforcement agencies, fear of not getting proper justice, and difficulty in proving the authenticity of the evidence (e.g., screenshots) (Koirala, 2020; Sultana et al., 2021).

Some women professionals who experienced TFSVA sought support or reported abuse to their manager or employer (Koirala, 2020; Sultana et al., 2021; Tandoc et al., 2021). Studies revealed that higher authorities did consider online sexual harassment as a serious issue or vital problem to deal with but were often not well equipped to deal with such issues and often ended the complaints with the minimum sanction (Koirala, 2020; Kundu & Bhuiyan, 2021; Sultana et al., 2021; Tandoc et al., 2021) One study reported that victim-survivors preferred to seek help from non-government organizations as it provided hassle-free support and it also maintained confidentiality (Sambasivan et al., 2019).

Barriers to Help-seeking

A number of help-seeking barriers were identified in the studies. Some reported that many victim-survivors preferred not to disclose TFSVA due to: the fear of social stigmatization of being identified as a victim-survivor; a culture of shame or fear of damaging their reputation; pressure from employer; fear of family honor; and pressure from family to keep silent, (Alsawalqa, 2021; Demir & Ayhan, 2022; Hassan et al., 2020; Jatmiko et al., 2020; Koirala, 2020; Sultana et al., 2021; Tandoc et al., 2021; Zagloul et al., 2022). Two studies identified that distrust or negative attitudes/experiences were a barrier to reporting to the police (Sarkar & Rajan, 2021; Sultana et al., 2021).

Several studies identified barriers underpinned by: deeply embedded patriarchal or gender stereotypes; misogynist norms of the society; victim-blaming attitudes toward women; and slut-shaming cultures (Alsawalqa, 2021; Demir & Ayhan, 2022; Hassan et al., 2020; Sultana et al., 2021; Tandoc et al., 2021; Zagloul et al., 2022). Some studies identified that a lack of proper knowledge about victimization and reporting were also barriers to help-seeking (Sultana et al., 2021). Moreover, "moral panic" also created more victim-blaming and secondary victimization (Sarkar & Rajan, 2021). It was also found that fear of physical harm as a repercussion of disclosing an incident was a considerable barrier (Jatmiko et al., 2020; Hassan et al., 2020; Sultana et al., 2021).

Sometimes victims-survivors reported the incidents to the respective online platforms (Hassan et al., 2020; Sambasivan

et al., 2019; Sultana et al., 2021). However, it was reported that due to the "community standard" problem and platforms' unwillingness to consider the victim-survivor's experience, they were discouraged from filing complaints. This is problematic for women in LMICs as while fully clothed photos of a woman might not violate the platform's policy, they can be used to harass women in a South Asian context (Sambasivan et al., 2019).

Facilitators to Help-seeking

Several studies identified some facilitators or motivational factors of help-seeking and disclosure of TFSVA, including: "exposing the harasser culture"; whistleblowing to warn others; releasing the burden of proof; resisting victim-blaming cultures through exposing offenders; professional and online support groups; media literacy training among female journalists; and government support (Demir & Ayhan, 2022; Sultana et al., 2021).

Understanding the Sociocultural Context of TFSVA in LMICs

The review indicated that the socio-cultural contexts and gender inequality largely shape TFSVA in LMICs. Specifically, socio-cultural factors included: gender norms; normalization of sexist or sexual behavior against women; traditional dominant power structures; patriarchal hegemonic perspectives; gender/victim-blaming cultures; systematic moral panic; conservative religious views; social stigma; and dominant male attitudes (Alsawalqa, 2021; Demir & Ayhan, 2022; França & Quevedo, 2020; Hassan et al., 2020; Jatmiko et al., 2020; Koirala, 2020; Kundu & Bhuiyan, 2021; Makinde et al., 2021; Sarkar & Rajan, 2021; Sultana et al., 2021; Tandoc et al., 2021; Zagloul et al., 2022).

Some studies described that the everyday normalization of sexism and misogynist behavior toward women replicated online was not different from physical environments; it is an extension of such behaviors which are considered acceptable (Koirala, 2020; Sarkar & Rajan, 2021). Alsawalqa (2021) described how, in conservative Islamic societies, women alone are blamed for their online victimization as it (online dating) is unacceptable behavior (i.e., to date someone before marriage). The fear of victim-blaming or slut-shaming culture and the patriarchal power structure of the family, and the normalization of GBV not only creates a dominant culture online but also hinder women from disclosing and reporting TFSVA to the police and relevant organizations (Alsawalqa, 2021; Demir & Ayhan, 2022; Hassan et al., 2020; Sultana et al., 2021; Tandoc et al., 2021; Zagloul et al., 2022).

Discussion

In this scoping review, we reviewed 1,617 papers and found 14 primary studies reporting the characteristics, impacts, and women's responses to TFSVA published between 1996 and 2022. Our analysis uncovered a number of essential findings for understanding TFSVA in LMICs. First, echoing the wider literature on TFSVA, the conceptualization of TFSVA varied widely. Secondly, socio-cultural context matters as patriarchal societal norms and gender power dynamics were the key underlying factors, along with anonymity and cultural taboos, fueling inappropriate sexual behavior online. Third, gender norms and dynamics silenced those who experienced online sexual abuse and shaped how women should respond to TFSVA. Finally, the key to responding to TFSVA in LMICs was to address hegemonic and patriarchal cultures, promote the de-normalization of GBV, and the implementation of robust structural measures.

Our review identified that more than half of the studies ($n = 8$) tried to explore the nature and type of violence, abuse, or harassment against women perpetrated by digital technologies without giving precise and clear definitions of the term they used in the study. Even though authors defined the terms they had adopted, there are many variations among studies on terminologies, conceptualizations, and definitions of technology-facilitated violence and abuse. This is no different from the wider global literature on TFSVA. However, it is essential to consider the culturally contextual and gendered nature of women's position in LMIC societies as contexts and variables can differ significantly which can make comparisons difficult across low- or middle-income countries, let alone comparing with high-income countries. For example, what might be considered a risk factor in one country, might be less so in another. Analysis of TFSVA in LMICs also requires centering and understanding the sensitivities surrounding the gender norms and sexuality of women in these settings. For example, in many LMICs, premarital relationships and sexual activities are considered a sin or prohibited and a matter of taboo such that in many LMICs, distributing women's fully clothed photos or calling them names in the wrong context can lead to significant negative consequences, which is not or mildly considered sensitive or sexual in nature in western societies (Sambasivan et al., 2019; Sultana et al., 2021).

Overall, the types of TFSVA reported illustrated that women across the LMICs experienced a variety of abuse types in personal and professional settings. However, working professionals and minority women faced more misogynist comments, gender-based offensive comments, trolling, rape threats, and religious or ethnic-based hatred comments. Zagloul et al. (2022) found that working women were more likely to experience TFSVA than non-working women. Though the comparison between working and non-working women's experiences of TFSVA is not straightforward, it was evident that professionals faced OH disproportionately. Moreover, four studies (Demir & Ayhan, 2022; Koirala, 2020; Kundu & Bhuiyan, 2021; Tandoc et al., 2021) revealed how women working in the media faced OH primarily orchestrated by those in positions of authority. Without

undertaking a comparative study with high-income countries or research to examine this in more detail, it is presupposed that gender norms, power imbalances, and the influence of patriarchy in relation to the role of women is likely to have a part to play in this finding (Alsawalqa, 2021; Koirala, 2020).

While current scholarship on TFSVA in LMICs reflects the intersections of gender, culture, religion and, sometimes, age, overall there is a distinct lack of attention paid to additional aspects of social location such as sexuality, non-normative gender identities (such as trans and non-binary identity), ethnicity, socio-economic class (except in the case of research in women's experiences in particular professional fields—mostly journalism), age, or (dis)ability. It is likely that this reflects that the evidence-base is rather nascent for countries in the LMICs; this claim is also supported as despite there being 136 countries included in the LMICs, only 29 of countries were represented in the included studies.

There was a consensus that the consequences of TFSVA are harmful, severe, and long-lasting. Research from higher-income countries has found the impact of TFSVA on women's mental health (e.g., depression, anxiety, stress), emotional behavior (e.g., eating disorder, aggressiveness), and internet behavior (e.g., withdrawing from social media, self-censorship) (Afrouz, 2021; Author 2; Backe et al., 2018; Henry & Powell, 2018). In our review, there is strong evidence that TFVA has similar short-term and long-term impacts (Alsawalqa, 2021; França & Quevedo, 2020; Hassan et al., 2020; Koirala, 2020; Sambasivan et al., 2019). However, for women in LMICS, reported impacts are individual, family, community, and social in nature. The most distinctive impact is that women faced unprecedented social backlash or repercussions, including reputational damage, canceling an arranged marriage, slut shaming or victim-blaming within or outside the family, and further coercive romantic engagement (Sambasivan et al., 2019). The review found that patriarchal societal norms and gender power dynamics were key underlying factors, along with anonymity, cultural taboos, and religious tagging, fueling TFSVA against women in LMICs.

The main help-seeking and coping mechanisms of TFSVA reported in the studies were the self-controlling or individual responses, including the "let it go" approach and changing self-identity in social media. These strategies gave victim-survivors temporary relief from what was happening and hid their identity, helping to develop the "thick skin" and "distraction strategy" to manage the victimization (Alsawalqa, 2021; Hassan et al., 2020; Koirala, 2020). However, such strategies do little to bring to light the problem of TFSVA at a community or societal level.

In terms of coping mechanisms and help-seeking, family and friends were considered the most important sources from which survivors felt the confidence or trustworthiness to share their experiences and seek help (Makinde et al., 2021; Sambasivan et al., 2019). However, it was common that victim-survivors were reluctant to report the incident to the police in particular, fearing more victim-blaming, family pressure, and fear of future repercussions. There is a strong body of work (e.g., Loke et al., 2012; Kaur and Garg, 2008) which illustrates the reluctance to report interpersonal violence in various forms (e.g., intimate partner violence, family abuse, and hate crime) and therefore it is not surprising to find that victims-survivors of TFSVA are similarly reticent. There are both similar and distinct reasons, according to the type of violence, and many victims-survivors will anticipate shame, embarrassment, blame, and of not being taken seriously by professionals. There can be a fear of repercussions for making disclosures. Moreover, as TFSVA is not well understood or widely recognized in LMICs, this can mean that there is an additional barrier in making disclosures for victim-survivors as they fear a lack of support offered, or that they might not recognize their experiences as abuse.

While the studies emphasize the types and impacts of TFSVA along with help-seeking practices, they did not give details on how to prevent TFSVA. Four studies revealed OH among women journalists, recommending training for journalists and more organizational support or solidarity efforts to tackle this OH against female journalists (Demir & Ayhan, 2022; Koirala, 2020; Kundu & Bhuiyan, 2021; Tandoc et al., 2021). However, training is only effective when there is a culture of openness and transparency and a willingness to change. It is the wider culture of patriarchy and hegemonic masculinity that sustains and enables behaviors described in these working environments. Thus, without wider cultural change, the effects of such training may be limited to raising awareness among those participants who generally are the recipients of TFSVA (i.e., women) enabling them to name behaviors in future, while not reaching those individuals who would benefit from attitude change (i.e., men and the perpetrators of TFSVA).

Overall, there is a dearth of empirical evidence on TFSVA in LMICs. All included studies were peer-reviewed articles. While relevant literature was found, it was rejected on the grounds of quality (e.g., no reporting of methodology), did not meet inclusion criteria, or lacked sufficient information for an informed decision to be made around inclusion or exclusion. The studies reported characteristics that reflected scholarship about TFSVA in Western countries, but as stated above, the specific socio-cultural contexts in LMICs are highly relevant to women's experiences and the relative acceptance of TFSVA perpetration, meaning that more research is needed to provide a solid evidence-base from which to argue for robust policy and practice responses. Finally, as noted earlier, only 29 of 136 countries meeting the definition of a low- or middle-income country are represented in this review meaning that research and knowledge is lacking about TFSVA in the vast majority of LMICs, or research is unpublished, or not widely available. It is more likely to be lacking and therefore more scholarship is needed.

Limitations

To our best knowledge, this is the first scoping review on TFSVA in LMICs, providing important insights about its characteristics, impacts, and help-seeking behavior. The challenge of conducting a scoping review on studies based in LMICs lies in the heterogeneity of the research units of analysis, design and, importantly, the settings. LMICs encompass a wide range of countries with varying levels of economic, social, and cultural development. Therefore, research in LMICs is often so diverse that ensuring a consistent and comprehensive approach to reviewing and synthesizing literature across different contexts is difficult. We did find that some studies were published in the native language, and a limitation of this review is that we did not consider the article published other than in the English language as we lacked the resources for translation services. Another limitation is the lack of consensus on the definition of TFSVA, along with different sampling procedures and data collection methods, making it difficult to compare and contrast study findings. Moreover, it is highly likely that victim-survivors in LMICs have not shared their online violence and abuse in detail due to the disclosure barriers linked to social and cultural factors such as shame, stigma, and reputational damage.

Implications for Future Research, Practice and Policies

This scoping review has important implications for future research, policy and practice (see Table 3). Overall, there is a need for more quantitative research to measure prevalence, identify which behaviors have more drastic impacts for victim-survivors, identify different factors of victimization and perpetration, standardize comparisons, determine attitudes, perceptions, and beliefs. Quantitative research could also be used to develop outcome measures and inform the development of interventions; both would need to be developed in a culturally sensitive way. There is also a need for qualitative research on TFSVA, including building a consensus on definitions, terminology, and conceptualizations to reflect the reported incidences and experiences by victim-survivors and to increase consistency across the understanding and theorization of TFSVA (see Table 4). It should also take an intersectionality approach to examine the influence of different social characteristics and locations (e.g., age, gender identity, sexual orientation, (dis)ability and socio-economic position) (Crenshaw, 1991). Further gendered analyses would be appropriate as it is critical to ensure equal and safe access for women in digital environments, promoting gender equality and building positive forms of masculinity to challenge the long-traditional hegemonic masculinity, patriarchal culture, and societal norms in LMICs. Research should also be undertaken in *all* countries defined as LMICs.

There is some evidence that professional solidarity and group efforts can make a difference in reducing or addressing online sexual harassment and abuse in professional settings (Kundu & Bhuiyan, 2021; Koirala, 2020). Research is needed

Table 3. Critical Findings.

- There is a notable lack of consensus and clarity in defining the terms used to refer to violence, harassment, and abuse facilitated by digital tools and technologies.
- In examining the types of technology-facilitated sexual violence and abuse (TFSVA), findings indicated that women in the low and middle-income countries (LMICs) experience a diverse range of behaviors, including online sexual harassment, image-based abuse, impersonation or doxing, gender-based hate speech/memes/trolling, and coercive control.
- The consequences of TFSVA broadly fall into categories of mental health, social and financial, though the short-term and long-term impacts are not routinely reported in the studies.
- Consequences are influenced by socio-cultural factors such as reputational damage, cancellation of arranged marriage, shame, and rejection.
- Mechanisms of coping strategies and help-seeking are infrequently reported in the studies. However, the identified responses are categorized into personal level responses, informal and formal, or professional/legal level responses.
- Disclosure to formal authorities is uncommon and problematic with structural barriers and drawbacks anticipated by victim-survivors.
- Diverse socio-cultural contexts, including hegemonic masculinity, patriarchal societal norms, and values, fear of individual and family dignity and honor, fear of victim-blaming and slut-shaming or gender trolling, were identified as key factors in shaping coping mechanisms, help-seeking behavior, disclosure of victimization *and* motivation of perpetration in the context of TFSVA.

to explore whether bystander interventions increase harm minimization or prevention in the context of technology-facilitated sexual violence and abuse (TFSVA). This has implications for the development of professional and community responses reflected in policy and practice environments; for example, in the form of codes of conduct and trauma-informed policies for the workplace. However, as noted above, policy and practice change can be difficult to achieve without wider cultural shifts away from the patriarchal norms and entrenched gender inequalities found in LMICs.

Evaluation of existing legal frameworks to determine strengths and weaknesses in addressing TFSVA is needed in LMICs. This review of policy and law should incorporate an assessment of how current policies respond to the diverse forms of TFSVA and to adopt new laws if necessary. Research is needed to determine and develop effective trauma-informed policies and practices in the workplace and educational settings addressing the prevention and harm reduction linked to TFSVA. Such research should be undertaken in relation to exploring understandings of TFSVA as well as of policy implementation and knowledge of relevant law and apply to all relevant professional settings in terms of those practitioners who might encounter victim-survivors (and or perpetrators) of TFSVA including criminal justice, social care, health, and charity sector specialists.

Table 4. Implications for future research, practice and Policies.

Practice
  Prevention and intervention strategies should aim to change patriarchal societal norms and culture to promote gender equity and
    positive masculinity.
  Policing intervention should be a well-guided checklist and tool to avoid judgmental attitudes and increase the victim-survivor's
    confidence.
  Bystander intervention should be focused on minimizing the harms and increasing the individual and community capacity.
  Professional ally or online support-based intervention can prevent and minimize the harms.
Policy
  To protect victim-survivors and minimize harm, revision of existing laws and reporting procedures are needed.
  Positive attitudes, gender equality policy, and equal access to digital tools and technology-related knowledge and training should be
    ensured in every professional setting.
  Law agencies, police, and victim-survivor support providers should have in-depth understanding and training of SVA (sexual violence
    and abuse) is needed. Therefore, the policy should increase related training and workshops.
  Government should have police focusing on raising awareness campaigns, workshops and training among individuals, family members,
    and community
  Educational institutions and professional organizations (businesses and others) should have strict gender equality policies and
    intervention strategies.
Research
  Research is needed on the context, definition, motives, and mode of technology-facilitated sexual violence and abuse (TFSVA) and,
    specifically, to better understand culture, societal norms, and legal systems in low- and middle-income countries (LMICs).
  Inquiry is needed to identify those groups of women who are most vulnerable to TFSVA, either working or non-working, or based on
    ethnic identity or religious norms to identify factors in experiencing TFSVA to develop effective prevention, responses, and systems.
  Research to compare TFSVA across high-, middle- and low-income countries would advance a global understanding of TFSVA.
  Specific investigations on determining the most and less harmful consequences of TFSVA are needed to understand the impact fully.
  More quantitative research is needed in the context of LMICs to explore the overall prevalence, reporting (using police records, and
    court files), and outcomes.
  More qualitative research would enhance understanding of the barriers/facilitators around disclosing/help-seeking to determine
    effective coping strategies, policy, and interventions.
  Policing of TFSVA in the context of LMICs is yet to be explored, research is needed to explore perceptions, knowledge, and
    interventions of police to deal with TFSVA victim-survivors.
  Scope and effectiveness of bystander interventions and online support forums/professional forums should be addressed in future
    research.
  Further research is needed for evidence-based, informed guidance and practice module for various informal and formal victim-survivor
    support providers, including non-governmental organizations, police, and social work agencies.

Conclusion

Our scoping review has uncovered that, in line with scholarship in Western countries, the conceptualization of TFSVA in LMICs varied across studies. Yet, it is prevalent with diverse characteristics and many impacts on women's lives. An important distinction is that this review has drawn into sharp focus the influences of different socio-cultural factors, including strong patriarchal norms and values, hegemonic masculinity, and pervasive victim-blaming attitudes and perceptions that pervade in LMICs. As TFSVA is influenced and shaped by these different sociocultural factors, it is essential to gain a more sophisticated understanding of TFSVA in its cultural context, which is different in LMICs to Western cultures, to determine the underlying motivations of perpetrators, survivors' tendency to bear the burden of victimization (by not disclosing or help-seeking), and to develop robust responses to TFSVA.

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