

**In Plain Sight:
Analysis of Twitter Conversations Regarding Non-Partner Sexual Violence in India**

By Nicole Ippoliti

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Approved by:

First Reader

Second Reader

Abstract:

Background: In recent years, reports of sexual violence against women in the public sphere in India have been gaining an increasing amount of publicity both on formal news outlets and social media. Increasingly, Indian citizens have been leveraging the power of Twitter as a platform through which to report, discuss, and advocate for social reform and justice in order to protect women from sexual violence in India.

Objective: The goal of this investigation was to conduct a proof of concept for a methodological study on how to code, analyze, and monitor discussion about non-partner sexual violence (NPSV) in India. The primary objective was to introduce a systematic methodology in which to examine the defining characteristics, extensiveness, and reach of Twitter messages pertaining to NPSV.

Methods: The study utilized standardized and systematic content analysis to reveal how NPSV information is disseminated and diffused through Twitter. The social media conversation sample (SM sample) included messages on NPSV with the search terms of #IndiaRape, #RapeIndia, #Nirbhaya that took place from January 1-December 31, 2014. The sampling strategy of every fifth tweet was used to select the final SM sample for analysis. Messages that were irrelevant to the topic, duplicative, or not in English were skipped.

Results: Out of a total of 902 messages across all hashtags, 154 tweets were selected for final analysis. Eighty percent of users listed India as their geographic location, 48% of users were male, 86% of messages were from individuals, and 38% of messages were reports of incidences of NPSV. Twenty-eight percent of tweets demonstrated a dynamic level of secondary engagement.

Conclusions: Twitter is a useful way to monitor discussion, broaden, and promote discourse on a topic that traditionally remains undiscussed. Further studies with a more robust and diverse sample are needed to determine whether these results are representative of the general public and also to determine whether a set combination of format and tone of content could let to higher secondary engagement and dissemination of messages.

I. Introduction

Background

Despite rising levels of education, gender awareness, and development, violence against women, particularly sexual violence, remains a pervasive public health problem and human rights violation in India.¹ Historically, gender-based violence has remained a highly stigmatized and taboo topic. However, as India modernizes and technology is becoming increasingly more accessible, Indian citizens have been leveraging the power of social media to broaden and promote discussion as well as disseminate reports on violence against women. A systematic analysis that captures the transition between information sharing, discussion, and call to action within the context of non-partner sexual violence is useful to understand the utility of social media as user-driven platform to advocate for the elimination of violence against women.

The topography of violence against women in India

In the past five years, reports of gender-based violence in public arenas by non-partner perpetrators have become increasingly more prevalent. A recent study published by Abrahams et al (2014) in *The Lancet* found that an estimated 7% of women globally reported being sexually assaulted by a person who was not their partner.² Data from the Asia Pacific region published in this journal show that in some countries, like Papua New Guinea, the figure rises to 27%.

¹ WHO and London School of Hygiene and Tropical Medicine. Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence. World Health Organization, Geneva; 2013

² Abrahams N, Devries K, Watts C, et al. Worldwide prevalence of non-partner sexual violence: a systematic review. *Lancet*;383 (9929):1648-54. 2014

India is no exception. The National Family Health Survey (NFHS-3) in India has determined that over one-third (34 percent) of women in India ages 15-49 have experienced some form of physical violence since the age of 15. Respondents report that most often, the cause of violence is domestic abuse, with 77 percent of total women reporting that the perpetrator of violence is her current husband.³ Recently, publicity about cases of non-partner sexual violence (NPSV) against women in public spaces within India have provoked worldwide condemnation of the country's ineffective response to such habitual and unacceptable behavior. Such infamous cases include the 2012 Delhi Gang Rape Case which occurred on a public bus, the 2014 Uttar Pradesh Rape which transpired in an open field, and the recent rape case by a cab service driver in New Delhi.⁴⁵

While these events succeeded in igniting worldwide attention to the lack of women's safety in public places in India, the perceived threat or experience of such violence (especially sexual violence) in public places remains a routine occurrence for girls and women there. In 2012, UN Women and The International Center for Research on Women (ICRW) conducted a household survey of over 2,000 girls and women to determine the perceptions towards women's safety and prevalence of violence in public places in Delhi. The survey (in which respondents were able to respond to more than one choice) revealed that 80 percent of respondents found streets to be the most unsafe, followed by markets (50 percent), parks (47

³ International Institute for Population Sciences (IIPS) and Macro International. 2007. National Family Health Survey (NFHS-3), 2005–06: India: Volume I. Mumbai: IIPS.

⁴ Mandhana, N. "Indians Outraged Over Rape on Moving Bus in New Delhi." New York Times. 2012 <http://india.blogs.nytimes.com/2012/12/18/outrage-in-delhi-after-latest-gang-rape-case/>

⁵ BBC News. "Two India girls gang raped and hanged in Uttar Pradesh." 2014 <http://www.bbc.com/news/world-asia-india-27615590>

percent) and bus stops (37 percent). In the low-income group, approximately 25 percent of women perceive public toilets as unsafe.⁶ Similarly, *The State of the Girl Child in India Report 2010*, which surveyed 10,000 adolescent girls from 10 cities across India, found that fear of violence in the public area is endemic nationwide with 77% of girls reported facing harassment in the public arena and 32% fearing it.⁷

Although these reports highlight the recent status of NPSV against women in India, it's difficult to determine whether the prevalence or incidence of NPSV in India has changed over time. According to the National Crime Records Bureau, the number of registered rape cases in India increased by 873.3% from 2,487 in 1971 to 24,206 in 2011.⁸ Naturally, India experienced a significant increase in population size between 1971 and 2011 which could partly account for the increase in the number of reported rapes. Furthermore, it is unknown, whether the increase in rape cases are due to a veritable increase in sexual assaults, or whether there has been an increase in reporting due to a greater willingness of victims to file charges, or a greater willingness of police officials to accept those charges.

While there remains insufficient data to reveal the true extent of non-partner sexual violence in India, there have been other mechanisms through which audiences worldwide have been receiving continuous information about this topic: social media and mass communication outlets. In the past five years, formal news outlets such as the *New York Times*, the *Guardian*, and *The Washington Post*, have published an increasing amount of articles detailing specific

⁶ UN Women and ICRW. Safe cities free from violence against women and girls: Baseline findings from the "Safe City Delhi Programme." 2012

⁷ Plan India. Girls in a changing landscape: Urban and digital frontiers. *The State of the Girl Child in India*. 2010.

⁸ National Crime records Bureau. "Crime in India 2012 Statistics." Ministry of Home Affairs. 2012

incidences and public reaction to sexual assault in India. A recent search in the *New York Times* archives revealed that from January 1st 2010 to December 15th 2012, 47 articles were published on the topic of sexual assault in India. From December 16th, 2012 to January 1, 2015, however, the number of articles published on sexual assault in India increased to 140. The events that took place on December 16, 2012 offer a possible explanation as to what may have facilitated this increase in formal news reporting on sexual assault in India.

The Nirbhaya Effect

On December 16, 2012, Nirbhaya, a 23 year old female paramedical student, was raped (and subsequently died) by a group of men on a public bus in Delhi. What otherwise could have been another unpublicized incident of non-partner sexual violence in India, transformed into a watershed moment for the role of social media in aggregating and diffusing information about sexual violence in India on a global scale. The brutality of the attack on a middle class woman prompted an unprecedented level of civil protest from Indian citizens throughout the nation. In order to stay on the pulse of this rapidly evolving civil demonstration and public outcry, many journalists turned to Facebook and Twitter to capture the sentiments of varied interest groups, individuals, and even government officials.⁹

As a result of the December 16th event, this gruesome behavior was brought to light through immense civil protest, largely galvanized by the power of social media platforms. For perhaps the first time in India's history, India's estimated 93 million Facebook users and 33

⁹ Belair-Gagnon V. Emerging spaces for storytelling: Journalistic lessons from social media in the Delhi gang rape case » Nieman Journalism Lab. Nieman Journal Lab. 2013. <http://www.niemanlab.org/2013/04/emerging-spaces-for-storytelling-journalistic-lessons-from-social-media-in-the-delhi-gang-rape-case/>. Accessed February 13, 2015.

million Twitter accounts were leveraged to incite civic dialogue about a historically taboo subject, a dialogue which was dispersed globally and not only encouraged formal media channels to publicize this event, but also pressured the Indian government to take swift political action to safeguard women's rights at the policy level.¹⁰ These efforts culminated in India's groundbreaking 2013 Criminal Law Act that called for stronger protective laws against rape, sexual assault, eve-teasing, and stalking. Ultimately, this catalytic event managed to transform the role of social media from one of a social networking site, to an empowering mechanism for information sharing, agenda setting, and political reform.

The Agenda-Setting Power of Social Media

Social media's role in allowing users to transition between information sharing, discussion, and call to action within the context of non-partner sexual violence is worth investigation.¹¹ Social media provides a relatively new and untapped resource for monitoring and understanding public health problems, especially as they pertain to social issues that remain uncaptured or delayed by household surveys.

In addition to a research tool, journalists have described social media as an advocacy tool, best understood within a framework of agenda setting through mass media.¹² Within this paradigm, the social media user becomes engaged and empowered as an active consumer of

10 Patel A. India's social media election battle. BBC News. 2014. <http://www.bbc.com/news/world-asia-india-26762391>. Accessed February 13, 2015.

11 Neiger, Brad L. (2013). "Use of Twitter Among Local Health Departments: An Analysis of Information Sharing, Engagement, and Action." *Journal of Medical Internet Research* 15.8

12 Mccombs, M., & Shaw, D. (1972). The Agenda-Setting Function of Mass Media. *Public Opinion Quarterly*, 36(2), 176-176.

communication and has abundant control over content, dissemination, and even impact of information regarding non-partner sexual violence in India. In addition, the interactive nature of social media means that consumers likely receive greater exposure to anti-violence content and messages disseminated via social media compared to messages in more traditional static media.^{13,14} With increased interaction and exposure, there is deeper processing of the message and the content and the potential for greater behavioral impact.¹⁵

Unlike previous forms of one-directional messaging to influence knowledge or behavior, social media allows for a multi-dimensional form of producing and responding to messaging—otherwise known as engagement. Social media users engage with content at increasing levels of interaction, moving back and forth along a spectrum from watching to sharing to commenting.¹⁶ The degree of user engagement may influence behavior change and eventually, a change in social norms regarding the acceptance of violence against women.

This study will investigate how social media can be used to monitor discussion about non-partner sexual violence in India, examining the defining characteristics, extensiveness, and reach about that type of discussion.

II. Methods

The study utilized standardized and systematic content analysis to reveal how NPSV information is disseminated and diffused through Twitter, a ubiquitous and active domain of

¹³ Ribisl, K. M. (2003). "The potential of the internet as a medium to encourage and discourage youth tobacco use." *Tob Control* 12 Suppl 1: i48-59.

¹⁴ Freeman, B. (2012). "New media and tobacco control." *Tob Control* 21(2): 139-144.

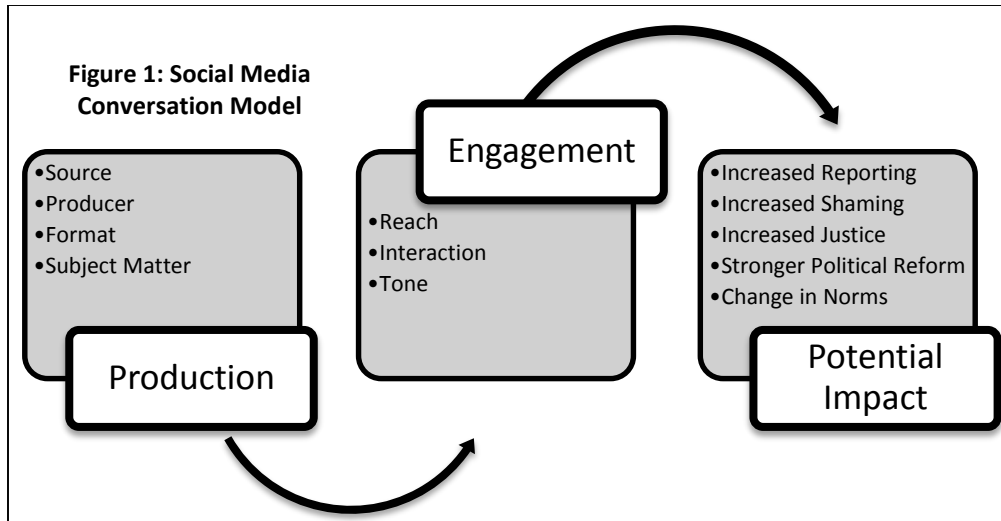
¹⁵ Freimuth, V. S. and S. C. Quinn (2004). "The contributions of health communication to eliminating health disparities." *Am J Public Health* 94(12): 2053-2055.

¹⁶ Neiger, Brad L. (2013). "Use of Twitter Among Local Health Departments: An Analysis of Information Sharing, Engagement, and Action." *Journal of Medical Internet Research* 15.8

social media in India. The social media conversation sample (SM sample) has the following inclusion criteria: Twitter conversations in English that took place from January 1-December 31, 2014, relating to non-partner sexual violence in India. Posts that were immaterial to the topic or duplicative were skipped. #IndiaRape, #RapeIndia, #Nirbhaya have been described as hashtags which were found to be frequently used in discussions on NPSV in India, and have therefore yielded the most amount of conversations on this topic in a calendar year. As such, these hashtags were used for the search in this investigation. In order to collect a representative SM sample of the total tweets per hashtag, the sampling strategy of every fifth tweet was used to select the final SM sample for analysis, which yielded a total of 154 twitter conversations out of a possible 902 tweets.

Figure 1 illustrates the conceptual model that was used to frame this analysis. Social media conversations can be conceived of as three action steps: (1) producing content, (2) engaging with content, and (3) acting on content to influence behavior. Across social media conversations, all three action steps may be influenced by the source of the communication, the characteristics of the content, and the strength and identity of the social networks of users.¹⁷

¹⁷ Hanson, C. (2013). "Tweaking and Tweeting: Exploring Twitter for Nonmedical Use of a Psychostimulant Drug (Adderall) Among College Students." *Journal of Medical Internet Research*, 15(4).



Source: Model adapted from work done in collaboration with FHI 360

The analysis of each conversation was conducted using a detailed coding guide (Table 1) that is standardized for analysis across the three different hashtags.

Table 1: Codebook for Analysis of Twitter Conversation

Dimension	Definition	Twitter data or content
Source	<ul style="list-style-type: none"> • Time of post • Type of post: original content or re-posted content from another social media source or another alternative source 	Time stamp, Analysis of tweet content
Producer	<ul style="list-style-type: none"> • Individual, organization, news • Size of network • Demographics (age, location, gender) when available 	Profile information, Twitter handle, total # of tweets, # following, # of followers
Format	Presentation Format: <ul style="list-style-type: none"> • Text • Photo • Video • Link • Combination of multiple formats 	Analysis of tweet content
Subject Matter	<ul style="list-style-type: none"> • Reports: Information about incidences of non-partner sexual violence • Expression of sentiment (anger, disgust, sorrow, concern, satisfaction) • Shaming Mechanism (to Indian government officials, society, perpetrators); • Call for Social Reform/Justice (policy reform, enact harsher punitive measures for perpetrators, galvanize a grassroots movement, create safer conditions for women at the structural level) • Call for Violent Retribution (death penalty for perpetrators, or retaliating with violence or abuse) 	Analysis of tweet content external links, comments, and additional hashtags
Reach	<ul style="list-style-type: none"> • Potential initial impressions • Secondary analysis of potential impressions as a result of interactions 	# of followers, # of hashtags, combined number of followers who retweet or favorite a post
Tone	<ul style="list-style-type: none"> • In Favor • Neutral • Against 	Analysis of tweet content
Impact	Indication that messaging trends could lead to increased: <ul style="list-style-type: none"> • Discussion of NPSV incidences • Public shaming • Collective calls for justice • Pressure to enact political reform • Shift in the change in norms regarding the acceptability of violence against women 	Analysis of tweet content, and interaction/engagement

Each conversation was coded first for primary content of the post, followed by a brief secondary analysis of the level of engagement of the post, such as number of retweets, favorites, and mentions of other users. Analyses focus on differences in characteristics of social media content as it relates to non-partner sexual violence in India to discern the nature of the conversation, determine what kind of users are producing this content, how diffused this content becomes, and implications of what the potential impact of both the production and engagement of this content has in changing norms regarding sexual violence in India.

III. Results

Unfiltered results of each hashtag yielded 902 tweets from January-December 2014: #IndiaRape (173), #RapeIndia (31), #Nirbhaya, (698). After selecting the tweets that met the inclusion criteria and randomly selecting every fifth tweet, the total final SM sample yielded 154 tweets.

The results of the Twitter conversation content analysis demonstrates extensive engagement on the topic of NPSV. Based on available geographic location, 80% of users were based in India, followed by 9% of users from England, and nearly 5% from the United States. Table 2 presents the summary of the social media production and content for each selected hashtag. Results demonstrate that nearly half (48%) of the twitter conversations took place from January-March. The remaining tweets are distributed across the rest of the year, signaling a variation in the timing in which these messages are broadcasted. The advantage of Twitter as a monitoring tool is that it is able to capture these messages as they occur in real time. Nearly all of the twitter conversation content that was generated was originally produced, and not

retweeted from an external source. The #IndiaRape and #RapeIndia reflect an equal distribution among female and male producers, while more male users included the #Nirbhaya in their conversations. Nearly 86% of the twitter conversations were produced by individuals themselves, as opposed to organizations or news sources. Thirty-one percent of producers had a network size or following of 101-500 users, and 27% had a following greater than or equal to 1,000. Results indicate that nearly 60% of users created “text-only” content, with 27% composing messages that were attached with external links. Reports of incidences of NPSV were the predominant subject matter of the twitter content, a call for violent retribution as the least featured content. The majority expressed tweets that were against NPSV, followed by 30% of neutral content, and 1% (reflecting a single post) in favor of NPSV.

Table 2: Summary of Social Media Content Analysis Results for Each Hashtag

	#IndiaRape		#RapeIndia		#Nirbhaya		Total	
	n=31		n=5		n=118		n=154	
	N	%	N	%	N	%	N	%
Source-Month								
Jan-March	7	22.5	2	40.0	65	55.0	74	48.0
April-June	14	45.2	2	40.0	11	9.5	27	17.5
July-Sept	7	22.5	1	20.0	24	20.3	32	20.7
Oct-Dec	3	9.8	-	-	18	15.2	21	13.6
Source-Type of Post								
Original Content	30	96.7	5	100	117	99.1	152	98.7
Reposted Content	1	3.3	-	-	1	0.9	2	1.3
Producer-Sex								
Male	14	45.2	2	40.0	58	49.3	74	48.0
Female	14	45.2	2	40.0	37	31.3	53	34.4
N/A	3	9.8	1	20.0	23	19.4	27	17.5
Producer-Type								
Individual	28	90.2	5	100	99	83.8	132	85.7
Organization	-	-	-	-	14	11.8	14	9.0
News	3	9.8	-	-	5	0.04	8	5.3
Producer-Size of Network								
<100	7	22.5	3	60.0	20	16.9	30	19.4
101-500	7	22.5	1	20.0	41	34.7	49	31.3
501-999	6	19.3	1	20.0	27	22.8	34	22.1
1000<	12	38.7	-	-	30	25.4	42	27.2
Format								
Text only	13	41.9	2	40.0	76	64.4	91	59.1
Text + Photo	3	9.8	-	-	4	3.3	7	4.5
Text + Video	-	-	-	-	3	2.5	3	1.9
Text + Link	12	38.7	2	40.0	28	23.7	42	27.2
Text + Link + Photo	4	12.9	1	20.0	6	5.1	11	7.1
Subject Matter								
Reports	17	54.8	2	40	34	28.8	59	38.3
Shaming Mechanism	3	9.8	-	-	34	28.8	37	24.0
Expression of Sentiment	8	25.8	1	20.0	27	22.8	35	22.7
Call for Social Reform/Justice	4	12.9	2	40.0	31	26.2	37	24.0
Call for Violent Retribution	1	0.03	-	-	13	11.0	14	9.0
Tone								
In favor			-	-	1	1.0	1	0.8
Neutral	17	54.8	2	40.0	27	22.8	46	29.8
Against	14	45.2	3	60.0	90	76.2	107	69.4

Table 3 reflects the total depth and level of engagement across each hashtag. The highest level of both engagement and dissemination is reflected through the 138 retweets, or reposting of messages from one user to another.

Table 3: Number of Retweets, Favorites, @ Mentions per Hashtag and in Total

	#IndiaRape	#RapeIndia	#Nirbhaya	Total
# Retweets	22	2	114	138
# Favorites	15	1	59	75
@ Mentions of other users	10	1	23	34

IV. Discussion

The purpose of this investigation was to put forth a proof of concept for a methodological study on how to analyze Twitter conversations on the topic of non-partner sexual violence in India. The results of this study reveal the following: (1) Twitter is a useful tool to monitor a real-time discussion of a topic that traditionally remains undiscussed; (2) the majority of these messages were dedicated to reporting incidences on NPSV; (3) the SM sample reflects messages that include both dynamic and static levels of engagement, which offers suggestions on how to optimize messaging for maximum reach.

Although Twitter conversations about NPSV were consistent throughout the study period, there was a marked surge of tweets that took place during the months of January-March. The increase in internet traffic reflected conversations dedicated to the rape and subsequent death of Nirbhaya, as well as several other reports of rape cases that took place during those months. Results indicate that 38% of messaging was dedicated to publicizing

reports of incidences of NPSV. These results reflect the utility of social media as a news-sharing mechanism, particularly in broadcasting reports of NPSV that would otherwise go unnoticed. Results also reveal that nearly 86% of the SM sample were individuals, and 59% of messages were constructed in a text-only format. Given that Twitter messages are confined to 140 characters, we can assume that in order to optimize the utility of a platform in which free speech is unhindered, users (predominantly individuals) are opting for a text-only format in order to maximally leverage the space to broadcast their own perspective.

The number of retweets, favorites, and “@ mentions of other users” reflected in Table 3 highlight both the level of active engagement between users, and the extensiveness or reach of messaging surrounding NPSV. Analysis of the subset of tweets that contain an active level of engagement are important in determining what characteristics result in a static post (no level of engagement) versus a dynamic post (active level of engagement). For example, the producer’s followers, and the message content, format, and tone are all characteristics that may result in a higher level of engagement of NPSV. Results show that across all hashtags, users with 1,000 or more followers were more likely to have their messages retweeted or favorited. In terms of content, format, and tone, results varied across hashtags. The #IndiaRape search term results determined that messages that had an active level of secondary engagement were reports that used a text + link format and were neutral in tone. Contrary to the findings of the #IndiaRape messages, the #Nirbhaya messages with active secondary engagement showed that these messages were largely reports, in the text-only format, and were reactionary in tone (against).

Future Considerations

Implementing this methodology on the topic of NPSV yields several recommendations for future studies. Firstly, future studies should employ the use of several hashtags for analysis in order to produce greater variation in results and sample size across hashtags. It is possible that had this study included a more extensive selection of hashtags for analysis, the final outcome would have resulted differently. Secondly, a greater SM sample, that is at least half of the total available tweets, is needed in order yield findings that are generalizable to the greater public. A larger SM sample could also be helpful in determining whether a set combination of format and tone could let to higher secondary engagement and dissemination of messages. Thirdly, this study used a manual approach to sampling and collecting data. Future studies should investigate whether a software program exists that can randomize and collect a selection of tweets in a given time period. The use of such a software will reduce the time required to manually sample and collect the size of data required for a robust sample. Lastly, as the low number of reported rapes illustrates, sexual violence in India remains highly stigmatized and deters victims from registering their abuse with the police. In a country of over one billion people, with a history of violence against women, it is unlikely that less than one percent of the population has experienced sexual violence. As such, future interventions that can leverage social media as a health messaging tool are critical in destigmatizing rape and encouraging social and political reform. For public health practitioners who aim to develop interventions targeted at violence prevention advocacy and outreach, these characteristics are useful in understanding how to transform a message from being a static post to dynamic. With an

estimated 33 million Twitter users, the potential impact and reach of health messaging in India could be immense.¹⁸

Limitations

There was a small sample size that was collected for final analysis. Given that the sampling strategy removed all duplicative messages, the final SM sample for analysis amalgamated to only 17% of the total possible tweets across all hashtags. As such, it is possible that this SM sample is not representative of the entire selection of tweets used across all three hashtags. Future studies should select a greater number of hashtags for analysis in order to generate a more robust, diverse, and representative SM sample.

V. Conclusion

The potential role of media in raising worldwide awareness and visibility around the status of women in India cannot be understated. In the past two years, it is evident that heightened media attention to the harmful gender norms that allow for such complicity of sexual violence have placed pressure on the Indian government to seek more legal and political reform that uphold women's rights. Subsequent work should be directed at determining the potential impact of these social media conversations. Potential impact could be manifested through behavior change communication, a shift in social norms regarding violence against women, or stronger punitive measures against perpetrators of violence. Future studies should

¹⁸ Patel, A. "India's Social Media Election Battle." BBC. March 2014 <http://www.bbc.com/news/world-asia-india-26762391>

retrospectively analyze social media content around NPSV over multiple social media platforms for a longer period of time in order to determine the potential impact of social media engagement. Deeper analysis could also inform intervention points, especially with regards to violence prevention messaging.