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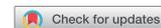


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MAJOR ARTICLE



Long-term impacts of college sexual assaults on women survivors' educational and career attainments

Sharyn Potter, PhD, MPH, Rebecca Howard, MA, Sharon Murphy, PhD, MSW, and Mary M. Moynihan, PhD

Prevention Innovations Research Center, University of New Hampshire, Durham, New Hampshire, USA

ABSTRACT

Objective: To examine the well-documented mental and physical health problems suffered by undergraduate women sexually assaulted while on campus with an exploration of how the trauma impacts a survivor's lifetime education trajectory and career attainment. **Participants:** In November and December 2015, researchers recruited US participants using an online crowdsourcing tool and a Listserv for sexual violence prevention and response professionals. **Methods:** Of 316 women who completed initial screening, 89 qualified to complete a Qualtrics survey. Eighty-one participants completed the online survey, and 32 participated in phone interviews. **Results:** Ninety-one percent of the participants reported health problems related to the assault that they attributed to difficulties they faced in their attainment of their education and career goals. **Conclusions:** The findings suggest the importance of simultaneously examining the effects of human capital losses and mental and physical health problems attributed to the costly public health problem of campus sexual assault.

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The negative psychological and physical health consequences suffered by sexual assault survivors are well-documented.^{1–6} Compared to women in the general population, college age women (18–24 years-old) are 3 times more likely to be sexually assaulted.⁷ Yet, little is known about societal and individual attainment losses resulting from sexual assault survivors' inability to realize their educational and professional goals or achieve them without disruption.⁸ The current pilot study focuses on a relatively unexamined but potentially significant aspect of this costly public health problem⁹ and demonstrates the need for prevention: how the college survivors' physical and mental health trauma connect with their education and career attainment, or what economists refer to as *human capital*.¹⁰ This is an important health problem for a sizable portion of undergraduate women not only while they remain on campus but in many cases, throughout their lifetimes. In this article, the term “survivor” is used to refer to a person who has been sexually assaulted and is dealing with the short-term and long-term effects of the trauma. The term “victim” is used to refer to someone in the immediate aftermath of the crime or when referring to certain aspects of the criminal justice system.¹¹

Human capital is defined as the individual knowledge, information, ideas, and skills¹⁰ that collectively add

economic value to both individuals and their community.¹² Education and acquiring career experience and skills in the workplace are important investments in human capital as they can increase both individual and organizational productivity.¹³ However, this human capital potential can be lost after a sexual assault as survivors face educational, economic,^{14,15} and health consequences that follow them far beyond their college years. Current estimates place the average lifetime cost of rape at approximately \$122,461 per victim in the United States, or \$3.1 trillion for all victims. These costs, which include medical bills, lost work productivity, criminal justice activities, and victim property loss or damage, affect not only the victim's life but also society at large, as government sources pay approximately one-third (\$1 trillion) of this economic burden.¹⁶

In the present study, the researchers sought to better understand the loss of human capital resulting from sexual assault based on the long-term educational and financial impacts survivors experience after their assaults. The researchers chose to study women who were sexually assaulted while in college between the ages of 18 and 24 in the United States. The prevalence of this crime against this subgroup^{1,7,17–20} provided the researchers an opportunity to look at the negative effects of sexual assault on the expectation of increased economic gains associated with

completion of college degrees.^{21,22} sexual assault on the expectation of increased economic gains associated with completion of college degrees.^{18,19}

Recent research suggest that many campus sexual assault survivors leave their academic programs or experience interruptions in their studies;²⁰ other research indicate that college students who had been sexually assaulted have a higher dropout rate when compared to the overall dropout rate of the university.²¹ To date, however, research on this topic remains relatively limited. Following an assault, survivors often alter their behavior. In college, this can lead to a decrease in class attendance, loss of motivation to attend or participate in a class, and avoidance of specific academic buildings or places they associate with the assault or perpetrator.²¹ These behavior changes help explain why survivors of campus sexual assault experience declines in their grade point averages (GPAs).²¹⁻²³

Likewise, women sexual assault survivors who are employed are more likely to miss time from work²⁴ and have positions for which they are overqualified and undercompensated compared to employed women who are not sexual assault survivors.^{14,25-28} These findings suggest that college sexual assault survivors, as well as society at large, lose human capital benefits that result from participation in and completion of post-secondary education.

Given the increasing centrality of college completion to lifetime success and financial security,^{18,19} understanding the impact of sexual violence on human capital in conjunction with the impact of sexual violence on physical and mental health is an important addition to the developing knowledge base regarding future health and economic wellbeing of college sexual assault survivors. To the research team's knowledge, this is the first study to collect and analyze concurrently education, occupation, and health data from women who were sexually assaulted while enrolled as college students in order to better understand the long term effects of sexual assault on their education and career attainment.

Moreover, prior research does not identify college sexual assault survivors as a unique subpopulation; and survey questions asking how many days of school or work were missed¹ do not provide a clear understanding of why the survivor missed classes (eg, those where the survivor would encounter the perpetrator in the class or traveling to or from that class) or other academic activities (eg, meeting with academic advisors, going to the library, attending class help sessions, visiting professors during their office hours). Finally, to date, researchers have not examined the long-term impact of campus sexual assault on academic and career attainment²⁴ and the interconnections between the occurrence of college

sexual violence, health, and human capital. The current study combined an examination of the well-documented mental and physical health problems suffered by sexual assault survivors with an exploration of how the trauma can impact a survivor's education trajectory and career attainment over the course of her lifetime, and make suggestions for preventing the costly public health problem of sexual assault on campus.

Methods

Procedure

All aspects of the research study were performed in compliance with the research university's institutional review board for the protection of human subjects in research. Researchers administered 2 different online surveys to identify qualified participants, and then conducted phone interviews with eligible participants in November and December 2015.

Participants

Online surveys

There are no national sources for recruiting participants for a study on sexual assault survivors as the majority of college sexual assault survivors (approximately 90%) do not report or seek assistance following the crime.²⁹ The researchers developed and piloted a 28-question online survey. The victimization questions come from the Violence Against Women Survey (2000),^{30,31} which was sponsored by the US Department of Justice and the Centers for Disease Control and Prevention. The remaining 26 questions were demographic and situational questions that the researchers have used in other studies examining bystander interventions and disseminating sexual misconduct policy.^{32,33} The researchers asked staff, undergraduate and graduate research assistants in their research center to review the survey. Rather than provide answers to the questions, they were asked to report any questions that were confusing, awkward, or unclear. Survey revisions were made before the questions were programmed in Qualtrics. The staff members and research assistants tested the Qualtrics survey for any programming issues before it was disseminated.

The Qualtrics survey was distributed using 2 online methods. First, participants were recruited through Amazon Mechanical Turk (MTurk), an online crowdsourcing tool that provides an adult participant pool for social science research.³⁴ For this study, the researchers used the website's option to limit the survey to participants within the United States. In order to find an eligible participant pool of women who were sexually assaulted during college between the ages of 18 and 24,

MTurk participants answered 3 screening questions: (1) "How would you classify your gender?" (2) "Did you attend college between the ages of 18–24?" (3) "Were you ever sexually assaulted while attending college between the ages of 18–24?" Eligible participants were redirected to a consent form and given the option to complete a 34-question online survey. Participants who answered the 3 screening questions received an MTurk standard recommended payment of 5 cents for completing the 3-minute survey.^{34,35} An additional 2-dollar bonus payment was paid to participants who screened in and completed the full survey. Payment procedures for participants were clearly outlined in the survey posting on the MTurk website before participants agreed to take part in the survey.

The second online recruitment tool was an e-mail message with a link to the online survey distributed through a Listserv for professionals working in the field of sexual violence prevention. The research team provided the wording for the recruitment letter and used the same screening procedure described above to direct qualified participants to the consent form with the option to complete the full survey or close their browser. However, except for those who participated in the telephone interview, Listserv survey participants did not receive compensation.

Of the 316 participants who completed the initial screen (216 from MTurk and 100 from the Listserv), 89 (26 from MTurk and 63 from the Listserv) qualified to complete the Qualtrics survey. Eighty-one of those participants completed the full survey and were offered the option to schedule a 30- to 60-minute phone interview. Interested participants provided their first name, e-mail address, and time zone so the research team members could contact them using a confidential website to schedule an interview.

Phone interviews

Upon completing the Qualtrics survey, 61 participants provided further contact information, 50 scheduled a phone interview, and 32 respondents completed a phone interview between November and December 2015. All participants who completed the phone interview received a \$20 gift card. The 18 participants who were not interviewed either cancelled or did not answer their phone at the scheduled interview time.

A research team consisting of a trained qualitative researcher, a counselor with expertise working with sexual assault survivors, a graduate student, and an undergraduate student intern conducted the interviews. Researchers followed a script containing questions regarding the assault, participant education, and career attainment. For example, "Survivors often have many

other factors that impact their ability and desire to choose a career. We discussed your major, but looking back can you see any other ways in which the sexual assault impacted your career decisions?" To elicit more details in participant answers, the researchers asked follow-up probes such as "Could you tell me a story about that experience?" Although all participants were asked the same questions, those who provided shorter initial responses received more follow-up probes. On average, interviews lasted approximately 30 minutes.

Coding

Survey data were analyzed using SPSS 23. A research team member transcribed the qualitative data, and then 4 members of the research team coded the transcribed interview data in 3 separate iterations, beginning with a 6-week period when the research team read each transcript independently and identified key themes. This team then met 3 hours each week for 16 weeks from June to September 2016 to identify collective themes and patterns in each transcript, as well as demographic variables, social support access, and mental and physical health impacts. The themes identified were consistent with those found in previous research examining the aftermath of sexual violence.^{1,4,6,22,36}

For subsequent coding processes, the team followed the recommended steps and explanations of Campbell et al³⁷ to develop reliable coding schemes for in-depth semi-structured interviews. Two research team members coded all interview transcripts for the 2 broad categories comprising human capital cost concepts – impacts on education and careers – and other variables of interest identified during the coding process (eg, relationships with family, friends, and romantic partners before and after the assault).

The primary coding process began when the research team randomly selected 3 interview transcripts (10 % – the upper limit recommended for group coding of semi-structured interviews) to serve as the basis for the primary coding.³⁸ The initial inter-coder reliability score for the first coding session of primary codes was 76.4%. After a process to review and discuss differences was completed, the coders used an additional sample of 3 interviews and confirmed that there were no longer significant discrepancies between the independent coders. The final primary code inter-coder reliability score was 90.9%.

Results

Participant Statistics

The 81 participants who chose to take part in the online survey confirmed they attended college in the United

States; however the researchers did not collect any more identifying information about their current location. After completing the online survey, participants who chose to sign up for a phone interview were asked for their time zone, in order to ensure that interview time slots aligned with the research center's time zone. The 58 respondents who agreed to be interviewed spanned across all 4 time zones in the contiguous United States, as well as one participant living in Greenwich Mean Time in South Africa. Based on this information, it can be reasonably inferred that the other 23 participants who took the online survey most likely lived throughout the contiguous United States as well.

All participants who completed the survey ($N = 81$) had been sexually assaulted while enrolled as a college student between the ages of 18 and 24. Participants ranged in age from 18 to 63, with a mean age of 32.3 ($SD = 11.1$). Over a third (37%) of the participants reported that they did not disclose the assault to anyone in the aftermath of the crime. Sixty-six percent of the 81 participants completed college; 24% did not complete college; and 10% were still enrolled in college at the time of the survey. Two-thirds (67%) of participants indicated the assault had a negative impact on their academic performance (eg, lower grades, missing classes); and 58% experienced a disruption in the timeline to obtain their degree by taking a semester off, taking fewer classes per semester, or dropping out of school. Rather than the assault being perpetrated by a stranger (12%), the perpetrator was someone known to the survivor in the overwhelming majority of cases (88%). This is consistent with most sexual assaults.^{7,29,39,40} See [Table 1](#).

Impact categories

After reviewing the interview data, researchers categorized the impact of sexual assault into 3 broad categories: (1) impacts on the survivors' college education experience, (2) impacts on survivors' experience in the job market, and (3) impacts on survivors' physical, mental, and reproductive health. In [Table 2](#), there are examples of the 3 broad areas affected by the assault. Examples of participant's words describing the impact of the assault, age and a brief description of the participants' educational and career outcomes in the aftermath of the assault are provided in [Table 3](#).

Education

The educational experience of the phone interview participants are arranged into 3 main categories of areas changed by the assault: (1) *disruption in study*, (2) *academic challenges*, and (3) *focusing on academics as a coping method*. In identifying a *disruption in study*, the

participants described their inability to resume the typical student role and difficulty continuing their regular academic schedules following the assault. For instance, some participants reported an interruption in their education trajectories, including leaving school, transferring to another institution, changing majors, or forgoing plans to pursue post-graduate education, including masters and doctoral degrees. As one survivor explained, the sexual assault perpetrated against her during her second year of college "brought my self-esteem down and it was what I thought about when I was at school...but I think yeah, I definitely think I would have [gone] on...to get my Master's, get my Doctorate degree after that, like I had never planned on stopping." At the time of the interview, she was still 4 credits short of her Bachelor's degree.

The second area affected in the aftermath of the assault, *academic challenges*, describes participants who reported that if they had not been assaulted, they would have achieved a larger portion of their initial academic goals. For instance, these participants reported a drop in their grade point average (GPA), increase in missing classes, and decrease in confidence in their academic abilities. A survivor who was sexually assaulted during her first year in college explained how she is still struggling to improve her GPA 5 years after the assault. "I had come into [school] with a full academic scholarship and after the assault my GPA had dropped down to a 1.0."

Along with the drop in her GPA, this survivor also told us how she missed the submission deadline for important paperwork in order to renew her scholarship and had to leave school. "Luckily, I appealed and I got [the scholarship] back because I had a paper trail of people I had talked to about the assault, but...even now about to graduate in May, my GPA isn't even a 3.0, so like, I'm still trying to dig my way out of that hole from freshman year."

The third impact, *focusing on academics as a coping method* includes participants who described positive academic outcomes, as some survivors focused more on studying to cope with the trauma of the assault, avoid thinking about the assault, and avoid socializing. For instance, one participant described "throwing herself into her schoolwork" in order to avoid social situations where she had the possibility of being perpetrated again. Even though academic work was used as a coping method, the participant used her focus on work to avoid further victimization. In this incidence, the survivor is still changing her behavior to avoid a perpetrator who had committed a crime against her. A participant who transferred schools after her sexual assault explained her mindset when starting at a new school. "I had this idea like, 'okay, I'm just going to come here, I'm gonna kill it,

Table 1. Participant assault information and educational attainment ($N = 81$).

	% of total survey
<i>Location of assault</i>	
Residence hall	24.7
Other location near survivor's school (eg, off-campus apartment, sorority, fraternity, local bar, classroom)	39.5
Not in campus vicinity (eg, survivor's family home, perpetrator's home, friend's home, party, hotel room, car, outdoors)	35.8
<i>Perpetrator identity</i>	
Acquaintance/classmate/friend/university personnel	62.9
Significant other	20.9
Stranger	12.3
University personnel	3.7
<i>Academic goal impact</i>	
No change	13.6
Negative impact (eg, decreased motivation and class attendance, lower grades)	66.6
Changed major following assault	33.3
Disrupted timeline to obtain degree (eg, took semester off, took longer to finish degree, dropped out of school)	58.0
Improved academic performance (eg, increased motivation, increased time in class and studying, more focus on academics, reduce focus on social life)	19.8
<i>Degree completion</i>	
Yes, completed degree on schedule	35.8
Yes, completed degree with time off or transfer	30.9
No, did not complete degree and no longer enrolled	23.5
No, still in school working towards degree	9.9
<i>Highest degree obtained</i>	
High school or GED	22.2
Associates or certificate	12.3
Bachelors	40.7
Masters or doctorate	24.7

I'm gonna just really get things done.' And that worked for the first few months through sheer, absolute will-power, and then I found my old behaviors coming back, and I got into an abusive relationship...."

Career

Participants who were no longer enrolled in school were asked to examine retrospectively how they made career decisions in the aftermath of the sexual assault. Based on their responses, the interview data were categorized into 3 main effects: (1) *perceived underachievement*, (2) *workforce performance* and (3) *safety limitations* that influenced a participant's ability to secure employment. The first impact, *perceived underachievement*, refers to participants who indicated the assault and the aftermath of the assault had negative implications for their labor market achievements. Participants stated they lost self-esteem following the assault and stalled their education goals, thus derailing their career goals. Other participants directly attributed the assault to their underemployment, not using their degrees, and/or feeling that their positions were not the best use of their skills. For instance, a

Table 2. Taxonomy of impact of sexual assault on survivor.

Impact	Areas of impact	Examples
Education	Disruption in studies	Disruption of education trajectory (eg, academic leave, transfer to different institution)
		Unintended financial consequences including loss of scholarship, unrefunded tuition
		Change in major
	Academic challenges	Attendance issues
		Negative academic performance changes
		Feeling participant could have achieved more
Career	Academic focus as a coping method	Loss in confidence
		Limited opportunities
		Negative impact on career opportunities
	Perceived underachievement	Improvement in GPA
		Added second or third major
		Choosing studying over social activities
Health	Workforce performance	Position lower than skill set
		Lack of confidence to advance in career field
		Failing to meet job expectations
	Safety limitations	Frequently in and out of workforce
		Not being present or showing up late to work
		Need certain work conditions to be met (eg, cannot be alone in retail store)
Mental health	Physical health	Mental or physical health impacts ability to do job
		Difficulties with coworkers or supervisors who do not respect triggers or boundaries
		Insomnia
	Mental health	Migraines
		Broken bones
		Stomach problems
Reproductive health	Mental health	Reproductive health problems
		Additional financial costs related to physical health problems from the assault
		Anxiety
	Reproductive health	Post-traumatic stress disorder (PTSD)
		Depression
		Triggers
Reproductive health	Reproductive health	Inability to sleep
		Self-medication
		Additional financial costs related to mental health problems from the assault
	Reproductive health	Reproductive problems
		Unwanted pregnancy
		Sexually transmitted infections contracted during assault
Reproductive health	Reproductive health	Additional financial costs related to reproductive health problems from the assault
		Additional financial costs related to reproductive health problems from the assault
		Additional financial costs related to reproductive health problems from the assault

survivor explained her rationale for forgoing her dream of being a musician after being diagnosed with post-traumatic stress disorder (PTSD) from her sexual assault. "I don't know how I can compete in an industry like that if I can't talk to men without panicking, if I can't be alone in a room with a man without like getting thrown into this sort of dark place."

Responses related to *workforce performance* included those from participants who attributed failing to meet their job expectations to lingering trauma from the assault. Some participants reported missing work regularly or showing up late to work due to mental or physical health problems from the assault. Others explained they frequently changed jobs or exited the workforce completely due to the stress associated with the sexual assault. For instance, one participant worked as a pharmacy technician after leaving school and moving home with her parents, but lost her job as a consequence of drug habits she acquired after the sexual assault. The participant explains that she “was still working at the pharmacy, but I was missing shifts. I took some drugs on a Friday night and I woke up on a Sunday afternoon, having missed two shifts of work and that was the end of it.”

Safety limitations refer to effects on participants who described barriers in their career related to fears or triggers that stemmed from the assault. For instance, some participants described their hesitation in taking positions where they have to interact with strangers or work alone in a public space. One woman recalled turning down a job offer where her responsibilities included working with juveniles in the court system, as her perpetrator was a juvenile who broke into her home. Another participant described why she left her administrative position after facing sexual harassment from her supervisor. She explained that if she had not been sexually assaulted, she could have handled the harassment and maintained her position, but instead felt threatened and fearful. This participant told us she blamed herself for the harassment, because “everybody warned me my boss is unfaithful to his wife...and when I finally reported [the sexual harassment] I got written up for confidentiality.”

Health

While the interview questions mainly focused on education and career attainment, the coding process also revealed health problems related to the assault attributed to many of the difficulties participants faced in their completion of education and career goals. Only 7 of the 81 women surveyed (8.6%) reported no significant change in their health after the assault. To understand the lingering health issues survivors combat, the researchers differentiated 3 categories of health: (1) *physical health*, (2) *mental health*, and (3) *reproductive health*.

Participants who described the *physical health* impacts of the assault indicated the injuries that occurred during the assaults included broken bones, bruises, and cuts. Thirteen of the women surveyed (16%) reported experiencing physical health problems after the assault that were not there before. Most of these women also

explained how the changes in their physical health affected their ability to thrive in an academic setting. One participant explained how gastrointestinal issues she attributes to the assault have left her feeling “chronically absent” from school and work. A participant described the perpetrator breaking her arm during the assault but went on to say that her injury was “not a big deal” because it was “nothing lasting” compared to the PTSD she experiences to this day.

A sizable majority of participants (72.8%) reported suffering *mental health* complications, not present before the assault. Fifty-eight participants reported their efforts to cope with the mental health problems (eg, insomnia, depression, anxiety, and/or post-traumatic stress disorder) affected their academic endeavors. As one woman explained, “I remember I was so depressed I couldn’t muster getting out of bed for class, so I’d just sleep for days.”

Finally, some women disclosed *reproductive health* impacts, including sexually-transmitted infections the perpetrator transferred to them during the assault and unwanted pregnancy from the assault. Participants reported disclosing these health conditions to intimate partners was an additional burden. Some participants also stated they avoid visiting medical practitioners, especially gynecologists, due to the vulnerability of being undressed in front of or being touched by a stranger. One survivor described her experience at an appointment with a physician about STDs the perpetrator transmitted to her during the assault, “I wasn’t ready to have the [STD] test done, because I was freaking out about getting naked for this person. But this doctor was totally not willing to work with me, and she just basically said I was being backward and I just needed to get over it and stop acting so weird about it.”

Many participants reported the serious financial burden connected to the needed physical, mental, and reproductive healthcare attributed to the sexual assault. They also described challenges paying for appointments with physicians and mental health practitioners as they transitioned in and out of school and the workplace, especially those who did not have health insurance. Participants also described the money that they were unable to earn as they missed work to deal with a physical or mental condition that they ascribed to the assault. Further, since many of these health problems were chronic, participants discussed missing work and having to leave (or being asked to leave) positions as a result of health problems they attributed to the assault. These health problems inhibited participants’ abilities to achieve greater success in the workforce. As one survivor who is still enrolled in college explained, “There’s a lot to be said also for the cost of dealing with the aftermath financially, because

I've had to pay for a therapist, and I've had to pay for going to the doctor when I don't feel well, and missing out on work, and the [pay]checks that I could have gotten... it really bothers me."

Comment

Education, career training, and health are the most important investments in human capital.¹⁰ For the 20% of women who are sexually assaulted while pursuing their undergraduate education,³⁹ these human capital opportunities can be undermined or lost as survivors struggle to cope with the trauma of having been assaulted. Previous research effectively illustrates the physical and mental health problems resulting from sexual assault;^{1,2,4-6} but the current study reveals that these problems linger and negatively impact the educational and career achievement of sexual assault survivors over the course of their lifetime. The participants shared examples of negative mental, physical, and reproductive health effects *and* instances of lost educational opportunities and deflated career ambitions they attributed to a perpetrator sexually assaulting them as they pursued college degrees.

The women who described the impacts of the assaults on their education often described a decrease in their GPAs, increase in missed classes, and an overall loss of self-esteem regarding their academic abilities. Those participants who described having no change in their academic performance or even an improvement in their studying abilities, often explained this was a tactic to avoid social interactions by focusing instead on academics. As one woman explained, "I put all my energy into doing my schoolwork and just being perfect" as an escape mechanism from the trauma she was experiencing. Most participants indicated the sexual assault that led to their depression, anxiety, and/or PTSD negatively affected their ability to focus on academics, causing many to take time off from pursuing their studies or drop out completely.

Even after college, repercussions from the assault often followed these women into their careers. Some participants described a lack of ambition or confidence that resulted in missed career opportunities. Individuals make a rational choice to pursue higher education because "the values of the expected social and economic benefits resulting from the education exceeds the cost of the education."⁴¹(pp593) For those women assaulted while in college, the human capital benefits of a college degree are often negated by detrimental effects of the assault including mental and physical health conditions and missed educational opportunities. Only 35.8% of study participants completed their degree without disruption.

This statistic is lower than national data on college completion indicating 59% of students (62% women; 56% men) complete their Bachelor's degree within 6 years of first enrolling at their institution.⁴²

The emotional and financial consequences of the campus sexual assault are not limited to survivors alone, but often have costs for their families, as well. For many families, financial planning to send a child to college begins when children are in elementary or middle school. When a student abruptly leaves college, her family is faced with additional financial stress as they find the tuition they have helped their child secure is essentially nonrefundable. Yet this seems minor when compared to the emotional toll as families try to help their children after their "body and soul have been violated" as a New York Times op-ed writer noted, who also estimated that the cost of helping her daughter following a campus sexual assault was the same cost as 4 years at a top United States College, \$245,573.63.⁴³ These costs include lost tuition, physical and mental health costs, and parents' lost wages, to name a few. One participant referred to her campus sexual assault as "the bomb that shattered everything." The impact of sexual assault on physical and mental health, individual and societal human capital losses, and the financial and emotional burden placed on families shows how little of a survivor's life remains untouched in the aftermath of a campus sexual assault.

Since Koss⁴⁴ and her colleagues conducted the first major study to focus on measuring sexual violence in the 1980s, rates of college sexual assault have remained virtually unchanged, and are still occurring at epidemic levels.^{39,40} In essence, the prevalence of a preventable crime impacting one-fifth of a population has remained relatively stagnant for over thirty years. In 2011, thanks to the efforts of sexual assault survivors and their allies, the US Department of Education mandated that schools work proactively to protect students.⁴⁵ As a result, universities are embracing policies designed to provide fair and expeditious justice and are also doing more to increase student awareness and engage campus community members in the prevention of sexual assault.⁴⁶

These strategies, though in the right direction, do not go far enough. Stemming the sexual assault epidemic at US colleges and universities requires a change in cultural norms that will prevent perpetrators from continuing to commit sexual assault.⁴⁷⁻⁵⁰ Two-thirds of survey participants in the current study reported a negative impact on their academic efforts. As studies based on human capital theory demonstrate, women face disadvantages in income earnings over the course of the lifetime compared to men.⁵¹ Without broader efforts by colleges and universities to identify and eliminate the structural, emotional, and physical barriers that campus sexual assault

survivors confront, academic and future economic parity for survivors will not be achieved. Further research demonstrating the connection between college sexual assault and lifetime capital gain losses in addition to mental and physical health problems may provide fundamental information for helping universities and colleges provide on-campus services focused on helping to improve the present and future lives of a large portion of their students. Likewise, this knowledge may support universities in their efforts to teach everyone in their community how to prevent this crime on their campuses.

Findings from the current exploratory study indicate the importance of campus communities strategically using their resources to end campus sexual assault. Campus administrators need to implement comprehensive prevention and response strategies that are shared with all members of the campus community. If administered in a strategic manner, these prevention and response strategies can change the larger campus norms and cultures, resulting in a reduction in sexual assault perpetration and victimization.³² The messages should be reiterated in different formats including in-person prevention programs or facilitated discussions, social marketing campaigns, and community awareness programs.^{52,53} It is important that these programs are adapted to meet the target audience and evaluated to ensure that the prevention messages are effective and impactful.³² Institutions must ensure that they offer trauma-informed resources for survivors who come forward, and that all members of the university community know how to support survivors and refer them to the services they need.^{53,54} These institutions must also have policies for ensuring that there is due process in conducting hearings for individuals accused of sexual assault perpetration to ensure a fair system for all members of the campus community.⁵²

Many colleges have begun training their community members in proactive bystander intervention, an approach that encourages individuals to confront and change social norms that contribute to violence. These proactive bystander approaches are designed to engage everyone in the community as allies by teaching safe and effective ways to stop perpetrators from committing sexual assault, intervening in sexual assault when it is happening, and caring for a victim in the aftermath of the crime.⁴⁷⁻⁵⁰ The Bringing in the Bystander[®] in-person prevention program was shown to increase students' levels of bystander behavior one year after the program was implemented, compared to students who had not been trained in the program.⁵⁵ Further, a study evaluating the efficacy of the Green Dot bystander intervention program found significantly lower levels of stalking and sexual harassment victimization and perpetration among

students attending a college with the Green Dot program, compared to students at 2 campuses without this program.⁵⁶

Another promising strategy is technology-based interventions, such as smartphone apps or websites, that place sexual assault resources in the hands of survivors in a private and confidential manner.⁵⁴ For example, the uSafeUS smartphone app enables college administrators to customize the medical, reporting, legal, counseling, and educational resources for their campus location. This strategy gives survivors, and those seeking to help them, access to critical information on sexual assault resources anonymously from their smartphone at any time.^{57,58}

The current findings also demonstrate the importance of increasing supports for survivors that will make them feel less vulnerable about reporting that someone sexually assaulted them. These findings corroborate previous research that indicates if a survivor does disclose, it is more likely to a friend rather than a professional for a number of reasons including privacy, shame, and fear of getting the perpetrator in trouble.⁵⁹ In a study of college sexual assault survivors, forcible rapes were nearly 7 (6.77) times more likely to be reported than rapes involving substances or alcohol; and women who suffered injuries during the rape were nearly 3 (2.77) times more likely than women without injury to report.⁶⁰ In the current study, 37% of participants told no one in the wake of their assault, causing them to bear the burden of the trauma on their own. This percentage is similar to the percentages of women who do not disclose their assaults found in other studies.^{40,59} The participants who did not disclose their assault often feared they would not be believed or supported by those around them. As one woman explained, "a big part of why I didn't report it also was because I was drinking and you know, no one wants to be the drunk girl who is saying she got raped."

Ending the sexual assault epidemic on college and university campuses will require changing cultural norms so women who are victimized are both supported and empowered. These changes can begin by listening to college sexual assault survivors about what they want and need during the recovery process. Findings from a 2017 qualitative study of focus groups with college sexual assault survivors, advocates, and healthcare professionals identified best practices for use by medical providers and other resources to facilitate comprehensive care following on-campus sexual assaults. Their recommendations include the use of nonjudgmental language to validate and normalize survivors' emotions, reactions and experiences after an assault. Participants also suggested that medical providers and other post-assault resources

should make efforts to be inclusive of varying backgrounds, including “gender, sexual identity, relationship status, race, ethnicity, etc.”⁵⁴

Collectively, survivor voices in the current and prior studies demonstrate the need for compassionate care in all aspects of the recovery process. Participants in the current study described negative interactions with medical providers, law enforcement, college faculty and administration, and loved ones when they chose to disclose their assaults. These findings reveal the need for compassionate, trauma-informed care overall. Research demonstrates if survivors receive the services they need and are treated with empathy in the process, social systems can improve their recovery process.⁶¹ For college students, access to mental and physical health care after a traumatic incident can increase a survivor’s chances of remaining in school and recovering from the trauma,^{21,62} reducing the human capital loss resulting from the crime committed against them.

Limitations

While the current study has a number of limitations, the findings suggest the importance of continuing to examine simultaneously human capital losses and mental and physical health problems attributed to campus sexual assault. These findings are based on a sample of women who responded to a posting on the Amazon Mechanical Turk crowdsourcing website, and women who responded to a Listserv for professionals in the field of sexual violence prevention and response. Therefore, generalizations cannot be made about the participants in this sample. While 2 different recruitment methods complicates this study, the study findings still point to the value of understanding the human capital impacts of sexual assault on a larger scale. The participants shared their experiences moving forward in the aftermath of the college sexual assault. It is unknown if the survivors who chose to participate were in a different place in their healing and processing than those survivors who chose not to participate in the study.

The researchers also recognize the social desirability bias related to self-reported sexual assault experiences, as participants may be less likely to share experiences that could be viewed unfavorably by others (eg, participating in health risk behaviors),⁶³ especially when the participant has no previous rapport with the stranger who is interviewing her over the phone. It is also important to consider the wide age range of our participant pool, and the varying amounts of time each survivor has had to process their experience, and how this might have affected the results of this study and what each participant was willing to share.

It is also unknown what differences race of the survivor may have on the impacts of sexual assault indicated in this study. Nor is it known how the findings from this study apply to students who are not women. Further research is needed to understand the human capital impact of this crime on male campus sexual assault survivors. Additionally, this study did not ask for participant’s sexual orientation, however several phone interview participants shared that they identified as lesbian or bisexual. Further research should explore how age, length of time since assault, sexual orientation, and gender affect the findings on human capital loss related to sexual assault victimization during college.

Additionally, the participants in the current study were more likely than the general population to indicate having a Master’s or Doctorate degree. However, nearly half of the participants with these degrees earned less than \$35,000 per year, and 85% earned less than \$55,000. The majority of these participants were recruited through the Listserv for professionals working in sexual violence prevention, a field known for its low earnings. While these women obtained multiple degrees, they are still undercompensated for the work that they do, as the average annual salary is \$71,760 with a Master’s degree, and \$86,528 with a Doctorate degree.⁶⁴

Conclusions

The present study signals the need for further research combining education, occupation, and health impacts on women who were sexually assaulted while enrolled as college students and noting the public health implications related to the findings. The small sample indicates the possibility of a problem of a larger magnitude. As documented in previous research, 20% of college women are survivors of completed or attempted sexual assault.³⁹

While the study sought to understand the human capital costs attributed to sexual assault that survivors and society incur, it became clear that it is difficult to separate the human capital and public health costs to both individuals and society. Though the survey and interview questions mainly focused on education and career attainment, it soon became evident to the research team that health problems related to the assault were intertwined with the problems survivors face in obtaining their education and career goals. This finding reiterates the need for comprehensive sexual violence prevention initiatives, especially on college campuses, as the myriad of physical and mental health problems described in previous research are costly from a public health perspective and impede a survivor’s ability to obtain the needed education to pursue her career goals. This combination results in survivors holding workforce positions that offer few

opportunities for advancement as well as limited (or no) health insurance that often leads to inconsistent medical care.¹⁴ The implications of these unstable work environments reverberate when these survivors become parents and struggle to support their families. There is a societal need for increased mental and physical health care for survivors. Inclusion of this more comprehensive approach in future research will provide important knowledge for a more holistic study of how sexual assault in college affects women (and other subgroups of survivors) in terms of their educational attainment and future financial earnings.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the University of New Hampshire Internal Review Board.

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