

# Dating App Facilitated Sexual Assault: A Retrospective Review of Sexual Assault Medical Forensic Examination Charts

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## Abstract

Dating app facilitated sexual assault (DAppSA) is a concerning phenomenon with minimal published research. This retrospective study explored if DAppSAs were different than other sexual assaults (SAs) committed by acquaintances through a review of 3,413 sexual assault medical forensic examination (SAMFE) charts from 2017 to 2020 in a Mountain West state in the United States. Routine Activities Theory and Confluence Model of sexual aggression provided the theoretical framework for the study. Inclusion criteria for DAppSA cases included (1) victim was 14 years of age or older; (2) victim indicated meeting the perpetrator on a dating app; (3) SA occurred at initial in-person meeting; and (4) victim had a SAMFE with SA kit evidence collection. DAppSAs ( $n=274$ ) represented 8.02% of overall cases and 13.92% of acquaintance SAs ( $n=1,968$ ). DAppSA victims had unique characteristics including a higher percentage of male victims (7.5%), college students (22.2%), and victims with self-reported mental illness (MI) (59.6%).

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Victims were less likely to fight back during the assault with lower percentages of kicking (5.8%) and hitting (9%). DAppSA victims and perpetrators were less likely to use drugs or alcohol before or during the assault. DAppSAs were found to be more violent SAs with increased strangulation (32.4%); assaultive/penetrative acts; and victim injuries, especially anogenital and breast injuries. Unique and troubling differences were found in DAppSA cases than other SAs committed by acquaintances. Due to the increased violent nature of DAppSAs, the researchers propose that sexual predators use dating apps as hunting grounds for vulnerable victims. Recommendations to address dating app safety concerns, influence dating app usage policies, and improve care to survivors are discussed through systems-based and trauma-informed approaches.

### **Keywords**

sexual assault, date rape, cultural contexts, adult victims

### **Introduction**

In recent years, media outlets have increasingly reported physical and sexual violence cases that occurred after the victim and perpetrator met on a dating app. For example, on May 24, 2020, 25-year-old Ashlyn Black was strangled and stabbed to death during her first date with 25-year-old Ethan Hunsaker after the two connected on Tinder (Rascon, 2021). In 2018, a man was charged with several counts of rape and attempted murder after using dating apps to find victims in New York, Connecticut, and California (Rojas, 2018). In 2021, a woman was raped and strangled by a state correction officer during their first in-person meeting after connecting on a dating app (Moore, 2022). Multiple other cases of sexual violence allegations involving several popular dating apps, including Bumble<sup>®</sup>, Grindr<sup>®</sup>, Match.com<sup>®</sup>, Mutual<sup>®</sup>, OKCupid<sup>®</sup>, Plenty O' Fish<sup>®</sup>, Tinder<sup>®</sup>, and others, have been reported throughout the United States (US) and other countries (Andone & Maldonado, 2018; Associated Press, 2020; British Broadcasting Corporation, 2019; Flynn et al., 2019; Li, 2020; Park, 2018; Picciani, 2020; Sopelsa, 2020).

Although cases of physical and sexual violence following dating app usage have been reported in the media, few research studies have focused on this apparently growing phenomenon. The aim of this retrospective study was to explore victim and assault characteristics documented in sexual assault medical forensic examination (SAMFE) charts in sexual assaults (SAs) occurring at the initial in-person meeting following dating app connections. The authors

refer to these selected SA cases as DAppSAs and other acquaintance SA cases as non-DAppSA cases. The research question for this study was: do differences exist between DAppSA cases and non-DAppSA cases?

## Background

Since the launch of the first online dating website in 1995, Match.com<sup>®</sup>, dating websites, and smartphone dating apps have transformed the way people connect to date and form relationships. Rosenfeld et al. (2019) reported that currently most newly-formed couples meet via dating apps or websites. Over half of young adults in the US reported using at least one dating app or website (Anderson et al., 2020). One of the most popular dating apps created in 2012, Tinder<sup>®</sup>, currently has over 75 million users (Iqbal, 2021). Furthermore, in the recent era of shutdowns and social distancing created by the COVID-19 pandemic, online dating sites reported record numbers of users (Vinopal, 2020). While these numbers represent substantial and growing numbers of dating app users, determining the actual number of active dating app users is challenging due to companies' secrecy policies (Castro & Barrada, 2020).

### *Dating App User Demographics, Motivations, and Behaviors*

A growing amount of research on dating app user demographics has been published since 2015. The gender of dating app users was initially reported as more male users, but recent findings indicate an equal proportion of male and female users (Ranzini & Lutz, 2017; Sumter et al., 2017). Many dating apps are for cisgender and transgender/nonbinary users while some dating apps' target populations are LGBTQ+ and nonbinary users. Individuals from sexual minorities, especially homosexual men, appear to have higher rates of dating app use (Castro et al., 2020; Pew Research Center, 2020). Dating apps might be especially beneficial for individuals in sexual minorities who struggle in openly sharing their sexual identity and connecting with potential partners (Castro & Barrada, 2020). The age subgroup with the highest number of dating app users appears to be between 24 and 30 years of age (LeFebvre, 2018; Ranzini & Lutz, 2017). Researchers have reported that more than 50% of college students use dating apps (Beauchamp et al, 2017; Newett et al., 2018). The majority of users report their relationship status as single (Castro & Barrada, 2020). Dating app users have higher socioeconomic status than nonusers (Castro & Barrada, 2020).

Several studies have reported on individuals' motivations for using dating apps. While some in society may view connecting for casual sex as the top motivation for using dating apps, research indicates that the primary

motivation of dating app users is not for casual sex and is dependent upon the user's gender. Across genders, entertainment through perusing potential matches was a top motivator for dating app use (Ranzini & Lutz, 2017). Females have reported using dating apps for friendship and self-validation, while males have reported using dating apps for ease of communication, casual sex, and excitement (Ranzini & Lutz, 2017; Sumter et al., 2017). Sexual minorities, primarily homosexual men, have indicated higher motivation for seeking casual sex in their dating app use (Badal et al., 2018). Across genders and age, a strong motivator is to find love and new relationships.

A few studies have focused on the impact of personality on dating app usage, particularly evaluating individuals with dark personality traits such as Machiavellianism and psychopathy (Lyons et al., 2020; Sevi, 2019). In a study of Tinder<sup>®</sup> users compared to nonusers, Sevi (2019) found that Tinder<sup>®</sup> users scored higher in Dark Triad traits of Machiavellianism, narcissism, and psychopathy than non-dating app users. Lyons et al. (2020) also reported that individuals using Tinder<sup>®</sup> scored higher in Dark Triad traits including sadism with male users having higher Dark Triad scores. For individuals who scored higher in the Dark Triad traits, they reported their primary motivation for dating app use was for casual sex or short-term mating (Lyons et al., 2020; Sevi, 2019).

Researchers have explored the behaviors of dating app users. Mayshak et al. (2020) found that coercive controlling dating behaviors were more likely in online dating relationships (Mayshak et al., 2020). Bonilla-Zorita et al. (2020) reported that dating app usage has been associated with increased risky behaviors, including sexual impulsivity and permissiveness, and higher rates of sexually-transmitted infections. One study reported that the shift from computer to smartphone online dating led men to exhibit more impulsive behaviors on dating apps (Jung et al., 2019). For example, they were more likely to respond to a user who had messaged them without even viewing their profile. They also showed behaviors of disinhibition as they sent more messages to users who did not fit their initial preferences for a potential partner (Jung et al., 2019). In a recent survey of 4,860 dating app users in the US, over half of the women reported they had received an unwanted sexually explicit message or image from another user, and 19% of female users (aged 18–34) stated they were threatened with physical harm through a dating app (Anderson et al., 2020).

### *Dating App Safety Issues*

The shift to connecting with individuals via dating apps poses unique safety concerns. Prior to dating apps, people usually met prospective dates through

mutual acquaintances or shared experiences which helped with vetting of potential dates. With dating apps, this form of vetting does not occur. Users of online dating services are unable to determine whether another user has a criminal background based on dating app profiles (Scannell, 2019). Users can change or enhance their profiles to appear more desirable (Scannell, 2019). Additionally, proximity-based location systems used by many dating apps allow users to obtain information on other users' locations and track them, creating potential safety risks (Farnden et al., 2015).

While research studies on DAppSA are few, investigative journalism reports have been published examining the safety of dating apps. Columbia Journalism Investigations co-published an article with ProPublica showing most dating apps do not screen their users for sexual offenders (Flynn et al., 2019). The authors cited examples of previously convicted rapists actively using dating apps. For example, in 2016, a woman unknowingly connected with a three-time convicted rapist on PlentyofFish<sup>®</sup>. Although the convicted rapist was listed in the most dangerous category on the state's sex offender registry, he was able to actively use PlentyofFish<sup>®</sup> because the app did not screen users' criminal history. The investigative reporters found that while some dating websites' paid subscriptions include increased security features, an overall lack of consistency in safety measures and protocols exists across online dating platforms (Edwards et al., 2021; Flynn et al., 2019).

The bulk of dating app safety features place the burden of avoiding victimization on the users or potential victims with written safety guidelines (Gillett, 2021; Pooley & Boxall, 2020). Recently, Match<sup>®</sup> Group announced a partnership with Garbo<sup>®</sup>, a background checking platform, to develop the capabilities for users to obtain criminal background information on other users for a modest fee (PRNewswire, 2021). Although an improved safety feature, few victims of SA report their crimes (US Department of Justice, 2018) resulting in limited numbers of sexual perpetrators with criminal background information.

## *SA Incidence and Response*

SA is a serious and pervasive public health, social, and criminal justice system concern in the US. According to the Centers for Disease Control and Prevention, nearly one in three women and one in four men will experience SA in their lifetime (Smith et al., 2018). Yet, in the US, it is estimated that more than three-quarters of SAs are not reported to law enforcement (US Department of Justice, 2018). Many SA victims do not seek health care post-assault. In a large national study, Zinzow et al. (2012) reported only 21% of SA victims received post-rape medical care.

When victims report SAs, they can request a SAMFE up to 5 to 7 days after assaults to receive medical treatment and forensic evidence collection. SAMFEs are generally performed by sexual assault nurse examiners (SANEs) or other trained forensic health professionals. The examiners follow standard protocols which include providing trauma-informed support; obtaining a history of the assault; performing a thorough physical examination; caring for, documenting, and photographing injuries; administering medications; providing information on healing resources; and collecting forensic evidence in a sexual assault kit (SAK) (US Department of Justice, 2013). Documentation for SAMFEs varies by jurisdiction but usually contains information about the relationship between victims and perpetrators along with the assault history.

### ***Research on Dating App Facilitated Sexual Assault***

Research on DAppSA has largely been conducted outside of the US. In 2016, the United Kingdom (UK) National Crime Agency (NCA) released a report of empirical police data indicating a 600% increase in SA cases initiated by online dating from 2009 to 2014 and identified some unique victim and case characteristics. An analysis of cases within this study ( $n=163$ ) found that 85% of the victims were female with 72% of assaults occurring at the victim's or perpetrator's residence (NCA, 2016). A small ( $n=11$ ) Australian retrospective study of SAMFE charts in which the victim met the perpetrator through a dating app and was assaulted at the first in-person meeting involved younger female victims (under age 30 years) and single perpetrators (Rowse et al., 2020). SA characteristics included penis to vagina penetration in 82% of cases with documented physical (73%) and anogenital (55%) injuries (Rowse et al., 2020).

As dating app usage continues to increase, information on the prevalence and unique characteristics of DAppSAs is necessary to reduce sexual violence. The purpose of this study was to explore victim and assault characteristics of DAppSAs and provide recommendations to address safety concerns, influence dating app safety policies, and improve care to survivors.

### **Theoretical Framework**

While a multitude of sexual victimization and offending theories expand our understanding of SA as a social phenomenon, the Routine Activities Theory and the Confluence Model of sexual aggression were utilized within this study's framework. The Routine Activities Theory describes criminal activity as a convergence of motivated offenders, suitable targets, and absence of capable guardians (Cohen & Felson, 1979). The Confluence Model of sexual

aggression provides insight into the motivated offender on dating apps and suggests that sexual offending results from factors within the domains of hostile masculinity and promiscuous-impersonal sex (Bruera et al., 2022; Malamuth et al., 1991, 1995). Prior research suggests that men using dating apps are more likely to possess dark personality traits suggesting hostile masculinity characteristics (Lyons et al., 2020; Sevi, 2019). Researchers have also found that heterosexual and homosexual men are more likely to be motivated by casual sex in their use of dating apps (Badal et al., 2018; Ranzini & Lutz, 2017; Sumter et al., 2017). The intersection of hostile masculinity and desire for impersonal sex within some men using dating apps may describe motivated offenders. Suitable targets within dating apps may be potential victims with increased vulnerabilities. As dating apps are predominantly used by individuals without oversight, capable guardians are lacking in this online environment. The Routine Activities Theory has been applied in multiple studies on cybervictimization (Aizenkot, 2022; Hawdon et al., 2017; Kabiri et al., 2022; Wick et al., 2017).

## Methods

The study was an exploratory, retrospective chart review of 3,413 charts, each representing a victim seen for SAMFE from 2017 to 2020 in a Western US State. The SAMFE charts were obtained through signed Memorandums of Understanding with forensic nursing teams within the state. Chart information was retrieved from a larger database ( $N=7,454$ ) of SAMFE charts compiled from eight counties from 2010 to 2020. These eight counties comprise approximately 85% of the state's population and represent rural, suburban, and urban communities (United States Census Bureau, 2021). Overall, the state's violent crime index is below the national average except for the crime of rape per Federal Bureau of Investigation Uniform Crime Reports (US Department of Justice, 2019).

In 2017, the research team created an additional variable, DAppSA, to indicate whether the victim met the perpetrator through a dating app and was assaulted upon the initial in-person meeting. Inclusion criteria for DAppSA cases included (1) victim was 14 years of age or older; (2) victim indicated they met the perpetrator on a dating website or app; (3) the SA occurred at the initial in-person meeting; (4) victim had a SAMFE with evidence collection; and (5) victim agreed to interview with law enforcement with SAK submission. Restricted SAKs, SA cases in which victims did not want to interview or contact law enforcement, were not included as the research team interpreted that this restriction also extended to prohibiting data for research purposes. The research team made the decision to specify DAppSA cases as

assaults in which the SA occurred at the initial meeting as it was difficult to discern other SA cases in which the victim and perpetrator initially met through a dating app but the assault occurred later in the relationship. SA cases in which the victim connected with the perpetrator through social media but not dating apps were not included.

As part of SAMFE documentation, SANEs collected information from victims regarding the relationships between the victims and perpetrators. SANEs categorized the relationship between victim and perpetrator as stranger, acquaintance, spouse/partner, ex-spouse/partner, or other. SANEs categorized the DAppSA victim-perpetrator relationships as “acquaintance.” As the DAppSA cases were under the victim-perpetrator relationship category of acquaintance SAs, the researchers compared the DAppSA cases to the other acquaintance SAs (non-DAppSAs), many commonly referred to as “date rape” cases.

Institutional review board (IRB) approval was obtained by the research team. Each SA case was assigned a unique identification number. Personal and identifiable information such as victims’ names, contact information, birthdate, and law enforcement agencies and case numbers were not included in the database. Data were coded directly from the SAMFE electronic or paper charts into Statistical Package for Social Sciences (SPSS) version 25 by a research team that included the Primary Investigator, two additional research faculty members, two graduate students, and eight undergraduate research assistants. Research team members developed and utilized a detailed coding book to promote data entry consistency and completed data collection as a group to address questions during the coding process. Ten percent of cases were recoded to evaluate interrater reliability. Descriptive statistics were calculated as follows: frequencies for categorical variables and mean, median, quartiles, and ranges for continuous variables. Chi-square analyses were conducted to explore associations between categorical variables. *T*-tests were completed for continuous variables. Victim and assault characteristics of DAppSA cases were compared to non-DAppSA acquaintance cases.

## **Results**

Out of the 3,413 2017 to 2020 SAMFE charts reviewed for the study, 1,968 (57.7%) were categorized as acquaintance SAs with 274 cases of the 1,968 acquaintance SA cases identified as DAappSA cases. The DAppSA cases represented 8.02% of the overall cases ( $N = 3,413$ ) and 13.92% of the acquaintance SAs ( $n = 1,968$ ). DAppSA cases increased after 2017 ( $n = 53$ ) through 2020: 2018 ( $n = 73$ ), 2019 ( $n = 74$ ), and 2020 ( $n = 74$ ). The 274 DAppSA cases were compared to the remaining 1,694 acquaintance SA cases which were

designated as non-DAppSA cases. Cohen's Kappa was calculated at .955 indicating high interrater reliability.

Study results of DAppSA cases are presented in the following order: victim characteristics and actions, perpetrator characteristics and actions, assault characteristics, and resulting victim injuries.

### *Victim Characteristics and Actions*

Several variables representing DAppSA victim characteristics and actions were analyzed and compared to non-DAppSA victims (see Table 1). The age of DAppSA victims ( $M=25.04$ ,  $SD=9.146$ ) was not significantly different than the age of non-DAppSA victims ( $M=25.898$ ,  $SD=10.149$ ),  $t(391)=1.407$ ,  $p=.080$  equal variances not assumed. Although dating apps are designed for adults, 15% of the DAppSA victims were between the ages of 14 to 17 years. DAppSA victims were more likely to be currently enrolled college students (22.2%) compared to non-DAppSA victims (16.5%)  $\chi^2(df=1, N=1,968)=4.475$ ,  $p=.034$ . The percentage of male victims in the DAppSA group (7.5%) was almost twice that of the non-DAppSA group (3.7%)  $\chi^2(df=1, N=1,968)=8.270$ ,  $p=.004$ . The SAMFE charts did not include information on sexual orientation. A substantial number of DAppSA victims (59.6%) reported mental illness (MI) and/or use of psychotropic medications compared to 47.1% of non-DAppSA victims  $\chi^2(df=1, N=1,968)=14.526$ ,  $p<.001$ . DAppSA victims also reported higher rates of chronic medical problems (45.1% vs. 37.0%)  $\chi^2(df=1, N=1,968)=6.531$ ,  $p=.011$ . A strong association was found between reported MI and/or use of psychotropic medications and chronic medical problems  $\chi^2(df=1, N=1,968)=59.057$ ,  $p<.001$ .

Researchers identified statistically significant victim characteristics that were less common in DAppSA cases than non-DAppSA cases (see Table 1). DAppSA victims were less likely to have used alcohol (24.4% vs. 44.4%)  $\chi^2(df=1, N=1,968)=38.622$ ,  $p<.001$  and drugs (16.2% vs. 22.0%)  $\chi^2(df=1, N=1,968)=4.567$ ,  $p<.033$  prior to the assault. Fewer DAppSA victims reported loss of consciousness during the assault (34.9% vs. 50.1%)  $\chi^2(df=1, N=1,968)=21.550$ ,  $p<.001$  and being asleep and awakened to the assault (4.7% vs. 14.3%)  $\chi^2(df=1, N=1,968)=18.968$ ,  $p<.001$ . Additionally, fewer DAppSA victims reported having no permanent address (9.9% vs. 21.7%); indicating DAppSA victims were less likely to be homeless  $\chi^2(df=1, N=1,968)=17.114$ ,  $p<.001$ . DAppSAs also had a lower percentage of victims who physically fought back against the perpetrators by hitting (9.0% vs. 13.9%)  $\chi^2(df=1, N=1,968)=4.251$ ,  $p=.039$  or kicking (5.8% vs. 10.1%)  $\chi^2(df=1, N=1,968)=4.463$   $p=.035$ .

**Table 1.** Victim Characteristics and Actions ( $N = 1,968$ ).

Variable	DAppSA (%)	Non-DAppSA (%)	$\chi^2$	df	p Value
<b>Victim Characteristics</b>					
Alcohol use	24.4	44.4	34.995	1	<.001*
Loss of consciousness	34.9	50.1	21.550	1	<.001*
Awakened to assault	4.7	14.3	18.968	1	<.001*
No permanent address	9.9	21.7	17.114	1	<.001*
Self-disclosure of MI/use of psychotropic meds	59.6	47.1	14.526	1	<.001*
Gender: Male	7.5	3.7	8.270	1	.004*
Chronic medical problems	45.1	37	6.531	1	.011*
Drug use	16.2	22.0	4.567	1	.033*
College student	22.2	16.5	4.475	1	.034*
Race: white/non-white	78.5	74.1	2.388	1	.122
Prior hx SA < 14 years	41.4	46.7	2.154	1	.142
Prior hx SA > 14 years	42.0	46.0	1.220	1	.269
Physical or mental impairment	9.6	8.7	0.235	1	.628
<b>Victim Actions Towards Perpetrator</b>					
Kick	5.8	10.2	4.463	1	<.035*
Hit	9.0	13.9	4.251	1	<.039*
Scratch	15.0	13.3	0.509	1	.475
Bite	5.8	6.2	0.038	1	.845

Note.  $N$  = sample size;  $\chi^2$  = chi-square;  $df$  = degrees of freedom; MI = mental illness; SA = sexual assault; DAppSA = dating app facilitated sexual assault.

\* $p < .05$  = asymptotic significance (2-sided).

Victim characteristics with nonsignificant associations ( $p > .05$ ) between DAppSA and non-DAppSA cases included the following: race, prior history of SA, and physical or mental impairment (i.e., sensory impairment, mobility impairments, and cognitive or intellectual delays) (see Table 1). Victims' actions of scratching or biting the perpetrator during the assault were found to not be statistically significant between DAppSA and non-DAppSA cases.

### *Perpetrator Characteristics and Actions*

The amount of information on perpetrators' demographic data and characteristics was limited as the source of study information was SAMFE charts. Information on perpetrators including age, race, mental/physical illness, and prior criminal history record was not available. Male perpetrators were involved in all DAppSA case. The SAMFE charts contained information on victim-perpetrator relationship, as noted previously, and perpetrator drug and

alcohol use before or during the assault as reported by victims. Similar to DAppSA victims, DAppSA perpetrators were significantly less likely to use drugs (17.9% vs. 25.9%)  $\chi^2(df=1, N=1,968)=8.475, p<.001$  or alcohol (30.0% vs. 40.0%)  $\chi^2(df=2, N=1,968)=9.922, p=.007$  before or during the assault (see Table 2). In both DAppSA and non-DAppSA cases, victims frequently reported “unknown” to questions regarding perpetrators’ use of drugs (31.5% vs. 26.7%) and alcohol (29.7% vs. 25.3%) with more DAppSA victims unsure if perpetrators had used drugs or alcohol prior to the assault.

Perpetrator actions analyzed in this study were those reported in the SAMFE charts as documented by SANEs based upon victims’ reports (see Table 2). Perpetrator action variables of strangulation, lubrication use, condom use, and washing the victim post-assault in DAppSA cases were found to be statistically significantly different than non-DAppSA cases. While strangulation rates were found to be high in both DAppSA and non-DAppSA cases, reports of strangulation during the SA was significantly greater in DAppSAs (32.4%) compared to non-DAppSAs (21.5%)  $\chi^2(df=1, N=1,968)=13.880, p<.001$ . Condom use (15.0% vs. 8.2%)  $\chi^2(df=2, N=1,968)=38.813, p<.001$  and lubrication use (14.2% vs. 8.5%)  $\chi^2(df=2, N=1,968)=29.759, p<.001$  were increased in DAppSA cases. The most common lubrication substance reported in DAppSA and non-DAppSA cases was the perpetrators’ saliva. DAppSA perpetrators were also much more likely to wash or attempt to wash their victims post-assault (13.8% vs. 8.4%)  $\chi^2(df=1, N=1,968)=6.821, p=.009$ .

DAppSA cases had higher reports of perpetrator ejaculation (52.7% vs. 33.7%)  $\chi^2(df=2, N=1,968)=39.832, p<.001$ . However, a high percentage of both DAppSA and non-DAppSA victims reported “unknown” when asked if perpetrators had ejaculated during the assault (31.1% DAppSA and 49.0% non-DAppSA).

Variables of perpetrator actions including verbal threatening/coercion, grabbing, physical blows as well as incidence of weapon or restraint use were found to be nonsignificant in comparing DAppSA to non-DAppSA cases (see Table 2).

### **Assault Characteristics**

DAppSA cases were found to have several unique assault characteristics (see Table 3). The location of DAppSAs varied from non-DAppSAs with the majority of DAppSAs occurring in a house/apartment or car and less DAppSAs occurring outside of in other locations, such as motel, bar, or club,  $\chi^2(df=4, N=1,968)=30.292, p<.001$ . DAppSAs had a greater number of assaultive acts (penetration of body orifice or perpetrator’s oral contact of

**Table 2.** Perpetrator Characteristics and Actions ( $N = 1,968$ ).

Variable	DAppSA (%)	Non-DAppSA (%)	$\chi^2$	df	p Value
<b>Perpetrator Characteristics</b>					
Ejaculation occurred	52.7	33.7	39.832	2	<.001*
Condom use	15.0	8.2	38.813	2	<.001*
Lubrication use	14.2	8.5	29.759	2	<.001*
Perpetrator alcohol use	30	40	9.922	2	.007*
Perpetrator drug use	29.7	25.3	8.475	1	.014*
<b>Perpetrator Actions Towards Victim</b>					
Strangled	32.4	21.5	13.880	1	<.001*
Perpetrator washed victim	13.8	8.4	6.821	1	.009*
Verbal threats or coercion	46.8	42.8	1.331	1	.249
Weapon use	11.0	9.1	0.939	1	.332
Restraints on victim	5.2	4.1	0.625	1	.429
Hit or punched	15.9	15.5	0.022	1	.881
Grabbed or held	73.9	73.5	0.014	1	.907

Note.  $N$  = sample size;  $\chi^2$  = chi-square;  $df$  = degrees of freedom; DAppSA = dating app facilitated sexual assault.

\* $p < .05$  = asymptotic significance (2-sided).

victim's genitalia) compared to non-DAppSAs: one act (28.5% vs. 34.6%), two acts (31.8% vs. 26.9%), three acts (24.3% vs. 13.5%), and four acts (7.9% vs. 4.0%)  $\chi^2(df=5, N=1,968)=55.716, p < .001$ . DAppSA victims were less likely to report "unknown" to number of assaultive acts than non-DAppSA victims (5.6% vs. 17.1%). DAppSAs had higher incidence of penetration of victim's anus by perpetrator's penis (29.0% vs. 22.5%)  $\chi^2(df=1, N=1,968)=4.819, p = .028$  and penetration of victim's mouth by perpetrator's penis (49.8% vs. 31.0%)  $\chi^2(df=1, N=1,968)=32.616, p < .001$ . Additionally, 81.2% of DAppSA cases involved contact between the perpetrator's mouth and victim's mouth, that is, kissing, compared to 68.0% in non-DAppSA cases  $\chi^2(df=2, N=1,968)=17.465, p < .001$ .

Two assault characteristics were found to occur in lower amounts in DAppSA cases: suspected drug-facilitated assault occurred in 10.2% of DAppSA cases and 17.7% in non-DAppSA cases  $\chi^2(df=2, N=1,968)=9.801, p = .007$ . Additionally, DAppSAs had fewer reports of multiple perpetrators involved in the assault (6.2% vs. 10.6%)  $\chi^2(df=2, N=1,968)=11.273, p = .004$ .

**Table 3.** Assault Characteristics (N= 1,968).

Variable	DAppSA (%)	Non-DAppSA (%)	X <sup>2</sup>	df	p Value
<b>Assaultive Acts</b>					
Contact with victim's mouth by perpetrator's penis/genitals	49.8	31.0	32.616	1	<.001*
Contact with victim's mouth by perpetrator's mouth	81.2	68.0	17.465	2	<.001*
Contact with victim's anus by perpetrator's penis	29.0	22.5	4.819	1	.028*
Contact with victim's vagina by perpetrator penis	89.4	85.0	3.017	1	.082
Contact with victim's genitalia by perpetrator mouth	35.3	33.1	0.425	1	.515
<b>Assault Characteristics</b>					
Multiple perpetrators	6.2	10.6	11.273	2	.004*
Suspected drug-facilitated	10.2	17.7	9.801	2	.007*
Location of assault:			8.183	3	.042*
House or apartment	72.5	69.3			
Car	14.3	11.1			
Other (i.e., motel, bar, club)	10.3	13.8			
Outside	2.9	5.7			

Note. N= sample size; X<sup>2</sup>= chi-square; df= degrees of freedom; DAppSA = dating app facilitated sexual assault.

\**p* < .05 = asymptotic significance (2-sided).

Two assault variables were found to not be significantly different (*p* > .05) between DAppSA and non-DAppSA cases: contact with victim's vagina by perpetrator's penis and contact with victim's genitalia by perpetrator's mouth (see Tables 3).

### Injuries

Data on the presence, type, and location of victims' anogenital and non-anogenital injuries as documented by SANEs on the SAMFEs were also analyzed. The results showed that DAppSA victims had more documented anogenital and non-anogenital injuries than non-DAppSA victims. Approximately half of DAppSA victims (50.2%) had at least one anogenital injury, compared to 38.8% of non-DAppSA victims  $X^2(df=1, N=1,968)=11.629, p=.001$ . Of

**Table 4.** Anogenital Injuries and Non-Anogenital Injuries ( $N = 1,968$ ).

Variable	DAppSA (%)	Non-DAppSA (%)	$\chi^2$	<i>df</i>	<i>p</i> Value
Anogenital Injuries	50.2	38.8	11.629	1	<.001*
Type:		1			
Abrasions	25.1	6.8	10.600	1	<.001*
Laceration	27.4	20.2	7.126	1	<.001*
Location:					
Fossa	30.7	19.3	16.426	1	<.001*
Fourchette	13.6	7.0	12.804	1	<.001*
Labia Majora	8.6	4.1	9.418	1	.002*
Hymen	6.3	2.7	8.450	1	.004*
Perineum	6.1	3.2	5.141	1	.023*
Non-anogenital Injuries	71.4	64.6	4.499	1	.034*
Location:					
Breast	23.5	13.9	16.524	1	<.001*
Chest/Back	16.4	18.7	2.357	1	.445
Abdomen	6.7	6.7	1.619	1	.308
Neck	18.8	19.3	1.523	1	.267
Extremities	52.1	52.6	1.155	1	.561
Head	11.8	11.1	1.071	1	.585

Note.  $N$  = sample size;  $\chi^2$  = chi-square; *df* = degrees of freedom; DAppSA = dating app facilitated sexual assault.

\* $p < .05$  = asymptotic variance (2-sided t-test).

those who experienced anogenital injury, a *t*-test revealed that DAppSA victims also had a higher mean of anogenital injuries compared to non-DAppSA victims  $M = 1.62$ ,  $SD = 2.902$ ,  $t(348) = -2.146$ ,  $p = .033$ .

Further analysis showed that abrasions (25.1% vs. 16.8%)  $\chi^2(df = 1, N = 1,968) = 10.600$ ,  $p = .001$  and lacerations (27.4% vs. 20.2%)  $\chi^2(df = 1, N = 1,968) = 7.126$ ,  $p < .001$  were the most common type of anogenital injury seen in DAppSA. Anogenital injury locations found to be statistically significant for female genitalia were the labia majora (8.6% vs. 4.1%)  $\chi^2(df = 1, N = 1,968) = 9.418$ ,  $p = .002$ ; hymen (6.3% vs. 2.7%)  $\chi^2(df = 1, N = 1,968) = 8.450$ ,  $p = .004$ ; fossa (30.7% vs. 19.3%)  $\chi^2(df = 1, N = 1,968) = 16.426$ ,  $p < .001$ ; posterior fourchette (13.6% vs. 7.0%)  $\chi^2(df = 1, N = 1,968) = 12.804$ ;  $p < .001$ ; and perineum (6.1% vs. 3.2%)  $\chi^2(df = 1, N = 1,968) = 5.141$ ,  $p = .023$  (see Table 4).

Similarly, a higher percentage of DAppSA victims had documented non-anogenital injuries. The prevalence of at least one non-anogenital injury in the DAppSA group was 71.4% compared to 64.6% of the non-DAppSA

group  $\chi^2(df=1, N=1,968)=4.499, p=.034$ . Unlike anogenital injuries, however, the  $t$ -test did not show a statistically significant increased number of injuries in those DAppSA victims with non-anogenital injuries ( $M=4.75, SD=9.536, t(348)=.435, p=.664$ ). The only physical injury location that showed a statistically significant difference between the groups was the breasts with substantially more breast injuries in the DAppSA cases (23.5% DAppSA vs. 13.9% non-DAppSA)  $\chi^2(df=1, N=1,968)=16.524, p<.001$  (see Table 4).

With the increased number of DAppSA victims with documented injuries, the researchers evaluated victims' reports of pain at the time of SAMFES. More DAppSA victims reported pain than non-DAppSA cases (66.8% vs. 59.5%)  $\chi^2(df=1, N=1,968)=5.221, p<.022$  with a mean pain score of 5.19 (0–10 pain scale).

## Discussion

The findings from this study expand on the limited understanding of DAppSA cases and signify that DAppSAs are uniquely different than other acquaintance SAs.

### *Victim Characteristics*

Victim demographic findings provided insights for both DAppSA and non-DAppSA cases. The mean age for both groups was approximately 25 years of age indicating that young adults are more vulnerable for SA. This age also aligns with the most common user age range for dating apps. As 15% of the DAppSA cases were between the ages of 14 and 17 years, it appears some victims under 18 years falsified age information in their dating app profiles. Dating apps do not require users to upload verification of their age although their policies state 18 years or older. Many studies have documented that males are less likely to report SA, so the greater amount of male DAppSA victims may be indicative of higher dating app use by homosexual or nonbinary men as reported in the literature. This study was conducted in a conservative US state in which homosexual men may be reluctant to openly make relationship connections possibly resulting in higher dating app usage. DAppSA victims were more likely to have permanent addresses and be college students reflecting higher socioeconomic status of individuals using dating apps.

Nearly 60% of DAppSA victims self-reported MI or use of psychotropic medications. The non-DAppSA group also had high rates of MI (47.1%) supporting the premise that MI in varying degrees is a significant vulnerability for SA (Miles et al., 2022). The significantly higher rate of MI in the DAppSA

group suggests that those with MI on dating apps have increased vulnerability for SA. Potential SA perpetrators may seek out vulnerable dating app users by viewing their profiles for indications of heightened vulnerabilities including MI. Application of the Routine Activities Theory suggests that individuals with MI who use dating apps may present as more suitable targets by motivated offenders.

As noted in the literature, a primary motivation for female dating app usage is for self-validation. Individuals with MI may be prone to seeking validation through external responses from potential dating app users. If potential SA perpetrators provide external validation through flattery or positive messages, then dating app users with MI may be more likely to arrange an in-person meeting with the perpetrator compared to dating app users without MI.

### *Assault Characteristics*

The decreased use of alcohol and drugs in the DAppSA cases suggests that many of these victims were assaulted without the additional vulnerability associated with drug or alcohol intoxication. Rather than being incapacitated by drugs or alcohol, the DAppSA victims likely experienced intense fear from being assaulted at the first in-person meeting with their dating app connections resulting in freezing or tonic immobility (de Heer & Jones, 2017; Moor et al., 2013; TeBockhorst et al., 2015). Indeed, SANE documentation on the SAMFE charts included many statements such as, "I thought I was going to die" and "I was so scared that I just laid there." The fear experienced by these victims was likely heightened by the increased amounts of strangulation as almost one-third of DAppSA victims reported being strangled during the SA. The finding that DAppSA victims were less likely to fight against the perpetrators by hitting or kicking further supports the premise that the DAppSA victims experienced greater freezing or tonic immobility responses. Unfortunately, the SAMFE charts did not contain information on tonic immobility so further investigation is needed on this topic.

The increased condom and lubrication use and perpetrators washing or cleaning victims post-assault infers greater perpetrator premeditation in DAppSA cases. Condom use and washing victims' genitalia might be attempts to decrease DNA evidence. Although condom use is higher in DAppSA than non-DAppSA cases (15.0% vs. 8.2%), the overall use of condoms in SAs is much lower than reported in consensual sexual intercourse in college age students of 43.9% (American College Health Association, 2021). Lack of condom use may be viewed as a more likely finding in non-consensual sexual acts. Additionally, the large number of DAppSA and non-DAppSA victims who reported "unknown" to if perpetrators had ejaculated

(31%–49%) substantiates the nonconsensual nature of these sexual encounters, as individuals engaged in consensual sexual acts are generally aware if their partner ejaculated or experienced orgasm.

DAppSA cases had significantly higher numbers of penetrative assaultive acts. Increased anal penetration correlates with the higher percentage of male victims in DAppSA cases. Penetration of the victim's mouth with the perpetrator's genitalia was also increased. Rowse et al. (2020) also found DAppSA cases to have high rates of penetrative assault, with 82% of victims reporting penile penetration.

In addition to increased penetrative acts, DAppSA cases had higher amounts of mouth-to-mouth contact (kissing) between the victim and perpetrator. Mismatched expectations may explain some of the reasons for DAppSA. Some dating app users report using dating apps for the purpose of meeting others for casual sex, while others (more often women) report using dating apps to meet new people and form friendships (Chan, 2020; Griffin et al., 2018).

Application of the Confluence Model of sexual aggression furthers our interpretation of the DAppSA findings related to assault characteristics. The higher degree of violence, specifically strangulation, in DAppSA cases indicates hostile masculinity in which male assailants sought to dominate or overpower victims through violent means. The increased use of condoms and lubrication suggests that men who committed DAppSAs were prepared for impersonal sex regardless of the victims' consent.

## *Injuries*

The greater prevalence of documented anogenital and non-anogenital injuries of DAppSA victims suggests that DAppSAs are more violent forms of SA. The substantially higher rate of strangulation in DAppSAs (32.4%) and breast injuries in DAppSA victims (23.5%) further substantiates this assertion. Strangulation poses a high lethality risk and may result in severe negative health consequences including stroke, injury to the carotid arteries and jugular veins, anoxic encephalopathy, vertebral/spinal cord damage, and adverse mental health consequences (De Boos, 2019).

## *Perpetrators*

Although mismatched expectations of sexual relations upon the initial in-person meeting may provide some insight on the phenomenon of DAppSA, it does not explain the increased violence found in DAppSA cases with more victim anogenital and non-anogenital injuries, strangulation, and assaultive

acts. Prior research on the greater degree of Dark Triad traits suggesting hostile masculinity found in dating app users may indicate that a fairly high percentage of violent predators use dating apps. These dating app users can alter their profiles to appear likeable and mild-mannered as a ruse to attract vulnerable potential victims. Once connected through the dating apps, individuals with Dark Triad traits may manipulate individuals into trusting them and agreeing to an in-person meeting. The Confluence Model of sexual aggression further supports that individuals with hostile masculinity traits are motivated by promiscuous-impersonal sex. We believe the findings from this study support the claim that violent sexual perpetrators use dating apps as hunting grounds for vulnerable, individuals.

## **Limitations**

The data for this study were obtained from SAMFE charts which infers some limitations. The data is dependent upon documentation by SANEs and forensic examiners. The data is also dependent upon information shared by victims during the SAMFEs. The findings from this study are based upon victims who reported their SAs so may not be representative of DAppSA victims who did not report. The primary race of DAppSA victims was white (78.5%) so minorities were underrepresented in this study. Minimal information was available on perpetrators' demographic information. The data analysis methods applied in this study provided key, preliminary information on DAppSA cases. Regression modeling data analysis will be completed in the researchers' future studies with a larger sample size of DAppSA cases resulting in more insightful findings.

## **Recommendations**

The benefits of dating apps are plentiful as the most common medium for relationship connections. Yet, the findings from this study on the growing phenomenon of DAppSAs raises serious concerns about dating app safety. We found that 14% of acquaintance SAs were DAppSA cases, rapes occurring at the initial in-person meeting. Although this is a notable percentage, we believe the actual prevalence of DAppSAs is much higher as the majority of SA victims do not report and many other SAs occur after the initial in-person meeting. The question for society and dating app companies to address is: what can be done to maintain the benefits of dating app usage while markedly improving safety?

First, we must consider what should *not* be done to improve dating app safety which is to primarily place the burden of preventing sexual violence on

victims. Unfortunately, this is the current primary prevention strategy in dating apps. By placing the burden of safety solely on victims, we corroborate SA victim blaming by examining what victims did or did not do prior to the assault. One religiously-oriented dating app encourages users to “go with their gut” on making dating app decisions. Unfortunately, this advice may be difficult if sexual predators appear “nice” and “safe” on their dating app profiles. Additionally, if the primary focus of preventing dating app violence is on victims’ actions, then victims may have increased feelings of self-blame and thereby less likely to report the SA. If victims do not report SA, then perpetrators continue to assault. While education on dating app safety is important, this approach is failing as evidenced by the high rates of DAppSA cases.

To improve dating app safety, we recommend a systems-based approach. A systems-based approach places the burden of increasing dating app safety on the social systems created by and within dating app companies. In applying Luhmann’s Systems Theory (2014) to dating apps, the ability of dating app companies to practice autopoiesis or the capabilities of internal direction and established boundaries must be examined to determine if dating apps are beneficial or not beneficial to society. One boundary can be interpreted as creating safe spaces for virtual communication and subsequent in-person meetings of dating app users. With growth in technology and artificial intelligence, additional safety measures could be adopted by dating app companies. Such measures may include requiring information about consent and dating safety to be read with every use, mandating valid government identification uploads prior to profile creation, connecting to criminal history databases for no additional user fee, improving artificial intelligence to block unwanted sexually-explicit texts or images, creating transparent systems for reports of SA, and responding quickly to sexual violence disclosures. In applying a systems-based approach, dating apps should be considered as a social system within the broader social environment. To improve dating app safety, we must address sexual violence as a larger social construct. If we desire to reduce sexual violence within dating apps, then actions must be taken to reduce sexual violence in society by supporting survivors’ SA disclosures, dispelling harmful myths surrounding SA and SA victims, and enacting policies and legislation to improve the criminal justice system response to SA (Spohn, 2020).

We further recommend implementation of trauma-informed policies and practices within dating apps to improve physical and psychological safety. To apply a trauma-informed response, dating apps should carefully review their messaging on safety guidelines to eliminate the burden of SA prevention on possible victims. In addition, dating apps should consider that a high percentage of dating app users, 42% in our findings, are SA survivors. Resources for

SA survivors should be easily found on dating app sites. The process for reporting SAs should subscribe to trauma-informed principles of providing clear reporting options, responding quickly and compassionately, and focusing on victim empowerment.

## Conclusion

The findings from this study indicate substantial and concerning differences between DAppSA and non-DAppSA cases. DAppSA cases were found to be more violent SAs with increased strangulation, assaultive acts, and injuries supporting the assertion that sexual predators use dating apps as hunting grounds for vulnerable victims. The application of Routine Activities Theory and Confluence Model of sexual aggression indicate that motivated offenders utilize dating apps in search of suitable targets: vulnerable individuals. Recommendations to improve dating app safety focus on systems-based and trauma-informed responses by dating app companies and society in general. These novel research findings should inform interdisciplinary practice to not only reduce sexual violence, but improve care to survivors of DAppSA.

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