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Sexual assault reporting: a retrospective study on care provided in gynaecology emergency care settings after sexual assault

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Summary

OBJECTIVE: To assess the characteristics of all people reporting sexual assault at the obstetrics and gynaecology emergency departments of Geneva University Hospitals (HUG) and Lausanne University Hospitals (CHUV) between 2018 and 2021.

METHODS: Retrospective analysis of medicolegal reports for all people reporting sexual assault at the obstetrics and gynaecology emergency departments of HUG and CHUV between 2018 and 2021. Included: cisgender women, non-binary, queer persons, transgender men with a vulva and vagina and transgender women, regardless of sexual orientation, aged at least 14 years old. Excluded: Children and adolescents <14, cisgender men and trans men with a penis (who usually do not consult obstetrics and gynaecology emergency departments after a sexual assault) and recurrent patients with more than three sexual assaults reported at a participating centre within the study period (the first three assaults were included). During the study period, the two regional university hospitals used the same forensic sexual assault reporting forms, which allows a uniform description of the sociodemographic and clinical characteristics of patients reporting sexual assault as well as the characteristics of the sexual assault itself.

KEY FINDINGS: Of the 962 sexual assault records during the 48-month study, 740 were retained for the analysis. Median age of victims: 24 years (interquartile range: 19 to 33 years; range: 14 to 93 years). On weekend days, the number of assaults was twice as high as on weekdays (45% of all sexual assaults took place during the weekend, on either a Saturday or Sunday). During the summer, the monthly number of assaults was increased by half. The summer months had the highest number of consultations (34%). 58% of victims reported knowing their assaulter, 28% did not, and due to amnesia, 14% did not know whether they knew their attacker or not. 24% of the patients were unable to recall or specify which types of penetration they were subjected to (if any), because of amnesia. 67% of patients reported vaginal penetration, 17% anal and 21% oral. 63% of victims reported some type of substance use (alcohol, drugs) prior to the assault. The police or public prosecutor ordered 40% of the sexual assault medicolegal examinations, while 60% of the victims came to the emergency department seeking care on their own. 56% of assaults take place at someone's home (victim's home, assailant's home, friend/family member's home, couple's home). 83% of patients were examined within 72 hours of the sexual assault. Ano-genital injuries were found in 28% of patients who underwent a gynaecological exam (n = 705). 21% of patients who underwent a gynaecological exam and reported anal penetration presented with anal injury. 28% of patients who underwent a gynaecological exam and reported vaginal penetration presented with genital injury.

CONCLUSIONS AND RECOMMENDATIONS: Such data can inform the general population as well as actors working in this field, including legislators, about the use of services after sexual assault, prevention and health education strategies and how to improve services for people who are sexually assaulted. There is no countrywide observatory of persons consulting for sexual assault in Swiss hospitals. We aim to create a national observatory that can inform prevention, care and education campaigns against sexual assault and its consequences for both men and women.

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Introduction

Sexual assault is a human rights violation and a global public health concern. The World Health Organization (WHO) defines sexual violence as "any sexual act, attempt to obtain a sexual act, or other act directed against a person's sexuality using coercion, by any person regardless of their relationship to the victim, in any setting. It includes rape, defined as the physically forced or otherwise coerced penetration of the vulva or anus with a penis, other body part or object" [1]. Other definitions insist on the lack of ex-

plicit consent rather than on the notion of coercion and refer to sexual assault as "any sexual contact or behaviour that occurs without explicit consent of the victim" [2]. The elimination "of all forms of violence against all women and girls in private and public spheres, including trafficking and sexual and other types of exploitation" is target 5.2 of Sustainable Development Goal 5 (SDG5) of the 2030 Agenda for Sustainable Development [3]. In addition to elimination, ensuring prevention and protection, access to justice, victim support, and strengthened national and international coordination are key to combating sexual assault [4].

Switzerland ratified the Council of Europe Convention on Preventing and Combating Violence against Women and Domestic Violence (Istanbul Convention) in 2017, and recently released the national action plan for 2022–2026 (PAN CI 2022–2026), which highlights three priority areas, the third being specifically related to sexual violence [5, 6]. Measures 37 and 38 are related to ensuring medicolegal care for victims of sexual violence and developing cantonal healthcare-related guidelines for victims of sexual and domestic violence [6]. Action 42 relates specifically to the improvement of national sexual assault statistics, which is particularly important to help inform future policies, training strategies and surveillance that will ultimately help improve care provided to sexual assault victims [6]. The Council of Europe's Group of Experts on Action against Violence against Women and Domestic Violence (GREVIO) insisted that Switzerland's legal definition of rape did not comply with the international standard that consent must be explicit [7, 8]. The Swiss criminal code used to define "rape" (Art. 190) as the forc[ing] of a person of the female sex by threats or violence, psychological pressure or by being made incapable of resistance to submit to sexual intercourse. In January 2024, the Federal Council set the entry into force of the new sexual criminal law, with its new definition of rape, for 1 July 2024, as requested by a majority of cantons. The new law, Art. 190, Par. 1 states that *"Any person who, against the will of another person, has sexual intercourse with that person, commits an act with that person similar to sexual intercourse involving penetration of the body, or who has that person perform such an act or who exploits that person's state of shock to that end shall be liable to a custodial sentence (...)"* [9]. Art 190, Par. 2 states: *"Any person who forces another person to engage in or tolerate sexual intercourse or an act similar to sexual intercourse involving penetration of the body by using threats or violence, psychological pressure or by being made incapable of resistance shall be liable to a custodial sentence (...)"* [9].

"Sexual abuse and Indecent assault" Art. 189, Par. 1 refers to *"any person who, against the will of another person, performs a sexual act on that person or has that person perform such an act on them or who exploits that person's state of shock to that end"* [9]. Art. 189, Par. 2 refers to *"any person who uses threats, force or psychological pressure on another person or makes that other person incapable of resistance in order to compel that person to carry out or tolerate a sexual act"*. In the context of our study, we define sexual assault as any sexual contact or attempted sexual contact without consent [9].

In Switzerland, data on sexual assault can be obtained from various sources (figure 1), such as official police statistics to reported cases of assault taken from administrative data (hospitals, victim violence consultations), and population-based surveys on sexual assault among others. In the Canton of Geneva, criminal offences for domestic violence increased by 11% in 2023 compared with 2022. In view of these findings, the Conseil d'Etat has adopted its 2023–2028 action plan to combat domestic violence, which includes measures to better understand domestic violence including sexual violence and how to combat it [10]. No statistics on sexual violence provide a comprehensive picture of the problem, with different sources of data representing different pieces of the puzzle. Shame, fear, stigmatisation, lack of awareness, legislation and protocols and many other obstacles prevent an unknown number of people from disclosing, reporting or seeking treatment for sexual assault. Some people may also struggle with identifying violent sexual behaviour as violence. Sample surveys can act as a proxy for prevalence or incidence rates. According to WHO's Global Database on the Prevalence of Violence Against Women, Switzerland is one of the twelve countries with the lowest prevalence estimates for lifetime physical and/or sexual intimate partner violence among ever-married/partnered women aged 15–49 (prevalence estimated at 12%) [11]. However, these estimates were conducted as part of Switzerland's participation in the International Violence against Women Survey (CH-IVAWS) almost 20 years ago [12, 13]. The CH-IVAWS was administered to a sample of 1975 adult women aged 18–72 years from the Swiss German and Swiss French parts of Switzerland, excluding the Swiss Italian population.

The most recent survey conducted by GFS Bern on sexual violence prevalence in Switzerland was published in 2019 [14, 15]. At least 22% of women and girls over the age of 16 in a sample of 4495 reported having experienced sexual violence (captured in the survey as various forms of "non-consensual sexual acts"); 12% of them had had sex against their will, while 7% were prevented from moving or had pain inflicted on them to force them to have sex [14, 15].

Little is known in Switzerland about sexual violence in subpopulations. Studies have shown that lesbians, bisexual women, transgender and non-binary communities [16, 17] experience significantly higher rates of sexual assault and rape compared with heterosexual women [18–21], probably because of higher discrimination, psychosocial disadvantage, barriers to reporting and lack of specific support services [20]. Surveyed women with disabilities have been found to have a 4-fold higher risk of experiencing sexual assault in the past year compared to women without disabilities [22]. Being a member of an ethnic or sexual minorities can also affect recovery after sexual assault [23].

The official sexual assault statistics are produced by the Federal Statistics Office and are based on data in the Police Crime Statistics Report [25]. These recorded crime statistics such as police crime statistics reflect only a small fraction of women and girls who were exposed to sexual violence, as these incidents are very rarely reported to the police [26–28]. In 2022, 867 instances of rape and 752 sexual assaults were recorded in Switzerland, a country with 8.7 million people. During the same period in Sweden, a

country with a population of approximately 10.4 million people, 9368 rapes were recorded by the police, in addition to 10,181 cases of "sexual molestation" [29]. Depending on the context, a higher rate of recorded sexual assault can actually reflect improvements in data collection, higher awareness and/or higher rates of reporting to the police [24].

Administrative data are data that are available and generated through routine collection, usually documenting the use of various types of services provided, such as medical care and victim legal consultations. The Swiss Federal Office of Statistics releases annual data on the number of people who have contacted a victim assistance centre and who have the status of beneficiary in accordance with the federal law on assistance to victims of crime (LAVI) and, since 2017, the Federal Act on Compulsory Social Measures and Placements Prior to 1981 (CSMPA). In 2022, there were 5859 victim consultations for sexual assault and rape [30]. Robust collection and analysis of such data can inform the general population as well as actors working in this field, including legislators, about the use of services after sexual assault, prevention and health education strategies and improve services for persons who are sexually assaulted. Studying service gaps and unmet needs based on administrative data can be a powerful tool for dialogue and advocacy at a national and international level to improve sexual assault prevention and response [31]. This is particularly important for Swiss hospital data on sexual assault.

Currently, Switzerland has registries for health-related outcomes such as HIV, cancer, transplants, hepatitis, air pollution and lung disease, among others. However, there is no countrywide observatory of people consulting for sexual assault in Swiss hospitals. Additionally, there has been little research on this subject, despite its importance for gaining knowledge about the characteristics of sexual assault victims, the assault that they experienced as well as the care and follow-up they received, and psychophysical and sexual health in the short, medium and long term [32–35].

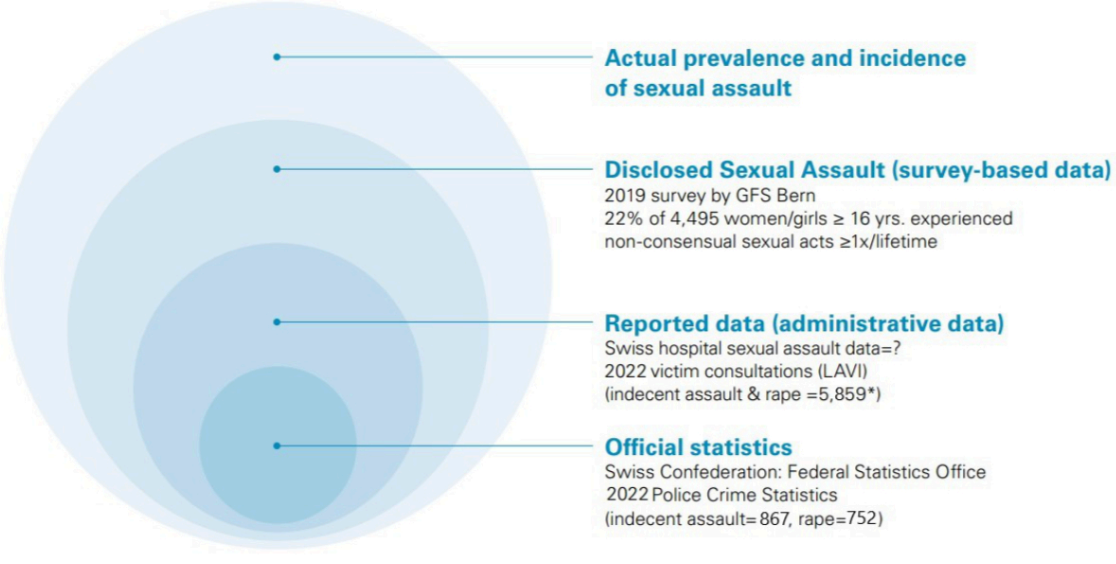
The aim of this study was to assess the characteristics of all people including cisgender women, non-binary, queer people, transgender men with a vulva and vagina and transgender women, regardless of sexual orientation, aged ≥14 years, reporting sexual assault at the obstetrics and gynaecology emergency departments of Geneva University Hospitals (HUG) and Lausanne University Hospitals (CHUV), between 2018 and 2021. The use of the term "woman" or "girl" throughout our report is used when referencing and discussing previous research or literature that refers to "women and girls". This is the first step of a broader research project entitled "Sexual Assault Reporting – A study to improve prevention, information and care after sexual assault in emergency care settings". The present retrospective study was conducted to inform the development of an electronic sexual assault report medicolegal file and a prospective multicentre study on people reporting sexual assault at the obstetrics and gynaecology emergency departments of the cantons of Geneva, Valais, Vaud and Ticino that started in 2022.

Materials and methods

Inclusion and exclusion criteria

Retrospective data were collected for all people including cisgender women, non-binary, queer persons, transgender men with a vulva and vagina and transgender women, regardless of sexual orientation, ≥14 years old presenting to the obstetrics and gynaecology emergency departments of the Geneva (HUG) and Lausanne (CHUV) University Hospitals to report a sexual assault over a 4-year period (2018–2021) (figure 2). A case-level analysis was conduct-

Figure 1: Sexual assault data in Switzerland, adapted from the European Institute for Gender Equality (EIGE): Administrative data collection on violence against women – Good practices [24]. * Multiple offenses possible. 1 gfs.bern. Le harcèlement sexuel et les violences sexuelles faites aux femmes sont répandus en Suisse. 2019. Available from: https://cockpit.gfsbern.ch/fr/cockpit/violence-sexuelles-en-suisse/. 2 Federal Statistical Office. Consultations de victimes selon l'infraction. Crime and criminal justice. 2022. Available from: https://www.bfs.admin.ch/bfs/en/home/statistics/crime-criminal-justice/assistance-victims/consultations-services.assetdetail.22684359.html. 3 Federal Statistical Office. Code pénal (CP): Infractions pénales et personnes prévenues. Crime and criminal justice. 2022. Available from: https://www.bfs.admin.ch/bfs/en/home/statistics/crime-criminal-justice/police/offences.assetdetail.21324220.html



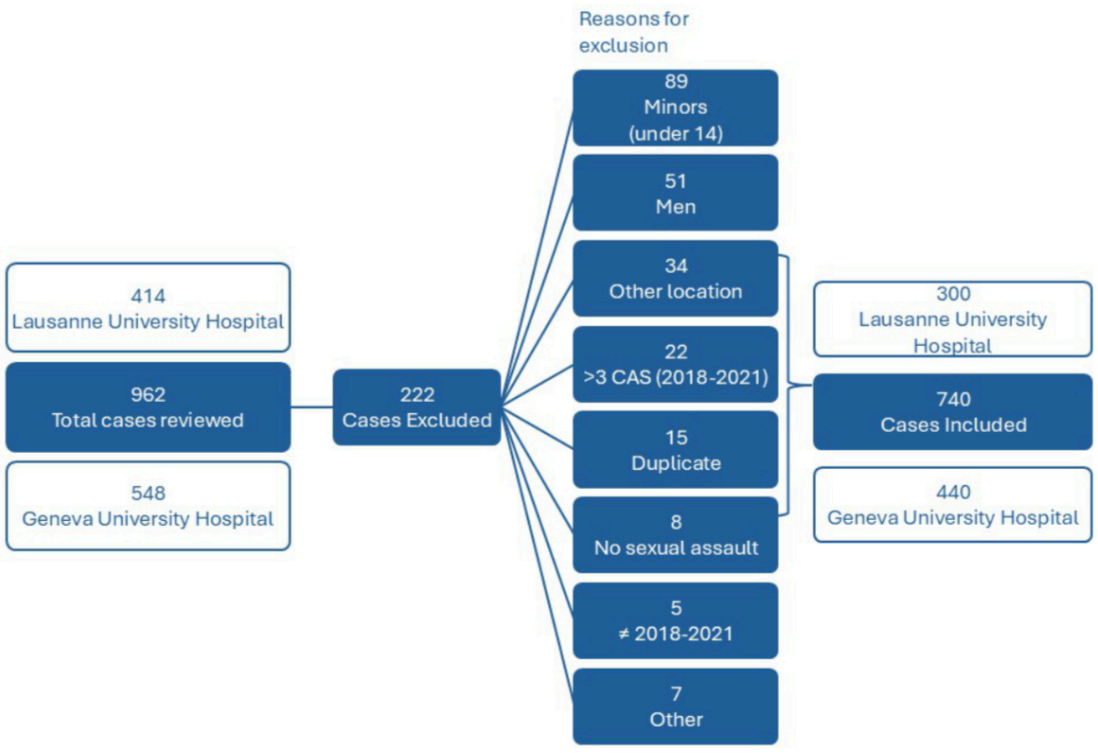
ed, meaning each sexual assault record was treated as a separate case, even if multiple cases involved the same patient. The term queer is used here only to refer to gender identity and not sexual orientation. Children and adolescents <14, cisgender men and trans men with a penis (who usually do not consult obstetrics and gynaecology emergency departments after a sexual assault) and recurrent patients with more than 3 sexual assaults reported at a participating centre within the study period (2018–2021) were excluded. For these recurrent patients, the first three assaults were included. Also, duplicate sexual assault reports that were not initially ordered by the police or the public prosecutor, as well as reports that did not include sexual assault but other types of physical or psychological violence alone were excluded. Starting in June 2020, the canton of Vaud increased the number of hospitals where a sexual assault report could be filed. Reports from Hopitaux d'Yverdons-les-Bains, Rennaz, Payerne, Nyon, Morges were excluded as they were outside of the scope of the ethics approval.

Forensic and gynaecological examination and data collection

The Romandy University Center of Legal Medicine (CURML), located on the two university hospital sites of Lausanne (CHUV) and Geneva (HUG) is a regional medicolegal centre created by the two university hospitals of French-speaking Switzerland. When a patient presents or is referred to the obstetrics and gynaecology emergency departments of HUG and CHUV for a sexual assault, they are triaged by a nurse and examined by an on-call forensic doctor from the CURML and a gynaecologist on duty at the gynaeco-obstetric emergency department of the two sites. Starting in 2020 in the canton of Vaud, the CURML-CHUV forensic doctors travel to the regional hospitals so the victims do not have to travel long distances. The main goal is to attend to the patient's needs in the most coherent and coordinated manner by offering them medicopsychological and medicolegal follow-up throughout the short, medium and sometimes long term [39]. Treatment includes post-exposure prophylactic therapies, emergency contraception and various follow-up appointments that are slightly different at HUG and CHUV. At HUG, if desired, patients ≥16 years old are given an appointment at the Interdisciplinary Unit of Medicine and Prevention of Violence (UIMPV) with a psychologist the following day, a consultation at the HIV clinic five days after and an appointment at the gynaecological outpatient clinic approximately ten days after [39]. At CHUV, patients receive a single appointment at the psychosomatic and psychosocial clinic in the obstetrics and gynaecology department within 30 days after the sexual assault [40]. After the gynaecological and forensic assessment at the gynaeco-obstetric emergency department, the follow-up for patients <16 is established at the paediatrics department.

The medicolegal exam provides the necessary documentation, in the event of criminal proceedings and with the victim's consent for the judicial authorities [39]. In 2018, the two regional university hospitals adopted the same paper format for the reporting of a medicolegal sexual assault, ensuring comparability between sites. We limited our analysis to the first four years, as a similar prospective study commenced in 2022. The data for this study were obtained from finalised sexual assault reports written and signed by the forensic doctor and gynaecologist who ex-

Figure 2: Flowchart



amined the patient and the heads of their unit, who review and sign every report. No patient follow-up was required.

Data cleaning and data entry

Data from finalised medicolegal reports were entered into REDCap by study staff, including an epidemiologist, research nurses and medical student interns. Each case was assigned a unique identifier to ensure confidentiality. The dataset included key variables such as demographics, assault characteristics and forensic findings. REDCap's quality control measures, including outlier detection and consistency checks, ensured data accuracy. Study staff also performed manual validation, reviewing records and verifying a random sample for discrepancies. Any inconsistencies were corrected, and once validation was complete, the dataset was locked for analysis.

Definitions

For a full list of all variables and characteristics, please see the appendix (available in the pdf version of the article at https://doi.org/10.57187/s.3913).

Ethics approval and funding

This research project was approved by the Cantonal Research Ethics Commission of Geneva and Vaud, Switzerland (CCER Project ID 2016-01144) and conducted in accordance with the Declaration of Helsinki, the principles of Good Clinical Research Practices, the Human Research Act (HRA) and the Human Research Ordinance (HRO), as well as other locally relevant regulations [36–38].

Data analysis

Descriptive statistics were provided to describe the sociodemographic and clinical characteristics of the patients reporting a sexual assault as well as the characteristics of the sexual assault itself. Statistical analyses were performed using the R base package of R software, version R-4.2.2 (R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/).

Results

A total of 962 sexual assault records during the 48-month study period were reviewed (414 from Lausanne University Hospital and 548 from Geneva University Hospitals), of which 740 cases were retained for analysis.

Twenty-three percent (n = 222) of the sexual assault records were ineligible for various reasons, with some cases having more than one reason for exclusion. Of the 222 cases excluded, 89 were minors under the age of 14, 51 were cisgender men or boys. Thirty-four cases reported sexual assaults at sites other than HUG or CHUV. As mentioned above, in June 2020, medicolegal exams became available at regional hospitals in the canton of Vaud, allowing women and girls reporting a sexual assault to consult at a local hospital rather than travel a long distance. For this reason, 34 cases benefited from the availability of these new services but were ineligible for inclusion in our study population. Three patients presented more than three times during the 4-year study period, of which 22 cases were excluded. Each of these patients' first three sexual assault cases were included. Fifteen sexual assault cases were excluded as they were duplicate files, and five were outside of the timeline. Eight cases were not included in our analyses because the assault was not sexual in nature, or the patient later stated that the assault never occurred. There were seven cases that were excluded for various other reasons, most frequently because the patient initially requested then later refused the medicolegal exam, or left before the medicolegal exam could be conducted. Since this is a case-level analysis, the final dataset of 740 retained cases consists of individual reports of sexual assault, not necessarily unique patients.

Sociodemographic characteristics

Table 1 provides details on the sociodemographic characteristics of the 740 patients presenting to the hospital emergency departments for a sexual assault. The age range was 14–93 years with the median age being 24 years (IQR:

Table 1:
Frequency of sexual assaults by year, site and sociodemographic characteristics of cases reported at the Geneva (HUG) and Lausanne (CHUV) University Hospitals (2018–2021). Values expressed as n (row group percentage) unless otherwise indicated.

Variable	Responses	n = 740
Age	Median (IQR)	24 (19–33.2)
	Range	14 to 93
Site	CHUV	300 (40%)
	HUG	440 (60%)
Year of the assault	2017	1 (0%)
	2018	174 (24%)
	2019	216 (30%)
	2020	156 (21%)
	2021	182 (25%)
	2022	3 (0%)
	missing	8
Day of the week	Monday	74 (10%)
	Tuesday	62 (8%)
	Wednesday	85 (11%)
	Thursday	79 (11%)
	Friday	99 (13%)
	Saturday	174 (24%)
	Sunday	158 (21%)
	Unknown	9 (1%)
Season	Winter	165 (23%)
	Spring	148 (20%)
	Summer	248 (34%)
	Autumn	171 (23%)
	Unknown	8
Civil status	Single	440 (60%)
	Unknown	125 (17%)
	Married	67 (9%)
	Divorced	44 (6%)
	Cohabiting	43 (6%)
	Separated	16 (2%)
	Widowed	5 (1%)
Victim's nationality (region)	Switzerland	279 (39%)
	Unknown	186 (25%)
	Europe	146 (20%)
	Americas	59 (8%)
	Sub-Saharan Africa	28 (4%)
	Middle East and North Africa	22 (3%)
	Asia	18 (2%)
	Pacific	2 (0%)

Table 2:
Frequency of sexual assault characteristics of cases reported at the Geneva (HUG) and Lausanne (CHUV) University Hospitals (2018–2021). Values expressed as n (row group percentage).

Variable	Responses	n = 740
Assault location	Home	418 (56%)
	…Assailant's home	195 (26%)
	…Victim's home	169 (23%)
	…Friend/family member's home	43 (6%)
	…Couple's home	11 (1%)
	Public	144 (19%)
	Unknown (amnesia)	78 (11%)
	Hotel	31 (4%)
	Car	23 (3%)
	Institutional care setting	22 (3%)
	Other (including unspecified)	17 (2%)
	Institution	3 (0%)
	School	2 (0%)
	Workplace	2 (0%)
Number of perpetrators	One	569 (77%)
	Multiple	56 (8%)
	Unknown (amnesia)	115 (16%)
Assailant known	No	206 (28%)
	Yes/Yes & no (1≤ assailants)	431 (58%)
	…Friend/colleague/peer/acquaintance	226 (53%)
	…Current intimate partner	73 (17%)
	…Other (known to victim)	39 (9%)
	…Former intimate partner	37 (9%)
	…Other (unknown to victim)	14 (3%)
	…Family member	13 (3%)
	…Social network/internet acquaintance	12 (3%)
	…Authority figure/care provider	10 (2%)
	…Unknown	6 (1%)
	Unknown (amnesia)	103 (14%)
Mandated by police/public prosecutor	No	441 (60%)
	Yes	299 (40%)
Patient to press charges	No	52 (7%)
	Yes	129 (17%)
	Undecided	5 (1%)
	Unknown	552 (75%)
	Not applicable	2
Prior sexual assault	No	121 (17%)
	Yes	139 (19%)
	Unknown	467 (64%)
	Not applicable	13
Time to examination	<24 hours	374 (51%)
	24–72 hours	236 (32%)
	72 hours – 7 days	96 (13%)
	>1 week	32 (5%)
Physical and psychological violence	No	216 (30%)
	Yes	355 (48%)
	Unknown (amnesia)	161 (22%)
	Not applicable	8
Condom use	No	379 (57%)
	Yes	42 (6%)
	Yes and No	33 (5%)
	Unknown (amnesia)	211 (32%)
	Not applicable	75
Recent sexual contact	No	557 (78%)
	Yes	161 (22%)
	Not applicable	22
Amnesia	No	473 (64%)
	Yes	267 (36%)
First vaginal penetration	No	635 (87%)
	Yes	66 (9%)
	Unknown	33 (4%)
	Not applicable	6
Contraception	No	377 (51%)
	Yes	230 (31%)
	Unknown	133 (18%)
Menopause	No	664 (90%)
	Yes	37 (5%)
	Unknown	39 (5%)
Pregnant at time of assault	No	735 (99%)
	Yes	5 (1%)
Menstruation	No	552 (75%)
	Yes	68 (9%)
	Unknown	120 (16%)
Bathed/Washed body before examination	No	252 (34%)
	Yes	335 (45%)
	Unknown	153 (21%)
Changed before examination	No	187 (25%)
	Yes	300 (41%)
	Unknown	253 (34%)
Habitual alcohol consumption	No	211 (29%)
	Occasionally	418 (57%)
	Regularly	64 (9%)
	Daily	38 (5%)
	Not applicable	9
Alcohol prior to assault	No	264 (36%)
	Yes	442 (60%)
	Unknown	33 (4%)
	Not applicable	1
Habitual drug consumption	No	508 (70%)
	Occasionally	158 (22%)
	Regularly	36 (5%)
	Daily	25 (3%)
	Not applicable	13
Drugs prior to assault	No	613 (84%)
	Yes	121 (16%)
	Not applicable	6

19–33). From 2018 to 2019, there was an increase in the number of sexual assault consultations seen in the emergency departments. In 2020, most likely because of COVID-19 and stay-at home orders, the emergency departments saw a decrease in the total number of people consulting in general and reporting sexual assaults, while in 2021 the number of consultations returned to the pre-Covid frequency.

Forty-five percent of all sexual assaults took place during the weekend, on either a Saturday or Sunday. The summer months had the highest frequency of sexual assault consultations (34%) in comparison to the other seasons (winter: 23%, spring: 20%, autumn: 23%).

Most of the patients were from Switzerland (39%) or other European countries (20%), followed by people from North, Central or South America (8%). A small proportion of patients presenting for sexual assaults were originally from Sub-Saharan Africa (4%) or the Middle East and/or North Africa (3%) as well as Asia (2%). The nationality of 23% of the study participants was marked as unknown, because there was no mention of their citizenship on their sexual assault report. Sixty percent of the patients seeking emergency care for sexual assault were single, 15% were mar-

ried (9%) or cohabiting (6%), and 8% were divorced (6%) or separated (2%). In 16% of the sexual assault reports, the civil status of the patient was missing.

Assault characteristics

In 58% of the sexual assaults, the victim reported knowing the assailant, while 28% of patients did not previously know the person who sexually assaulted them. Of those who knew their assaulter, over half (53%) were a friend, colleague, peer or acquaintance. Current intimate partners (17%) and former intimate partners (9%) represent a significant proportion of known assailants. Family members and authority figures were more rarely cited as the perpetrator in this population older than 14 (table 2).

In 8% of cases, there were multiple perpetrators, where the assailants were mostly a combination of known and unknown. There was one assailant in 77% of the sexual assault cases, and 16% of the patients did not know the number of perpetrators because of amnesia. Seventeen percent of patients stated that this was their first sexual assault, while 19% stated that they had experienced prior sexual assault. In 64% of the sexual assault reports, there was no mention of whether or not the person had another sexual assault experience.

The police or the public prosecutor ordered 40% of the sexual assault medicolegal examinations, while 60% came to the emergency department seeking care of their own volition. Seven percent of the patients clearly stated that they did not intend to press charges, while 17% declared that they intended to bring charges against their aggressor. For 75% of the sexual assaults, we do not have additional information on the survivor's intention to press charges or not.

Fifty-one percent of patients presented for emergency care within 24 hours of the sexual assault, and another 32% within 24–72h, totalling 83% within the first 3 days. Thirteen percent came to the hospital between 72h and 7 days, and the remaining 4% came after one week.

Thirty-six percent of patients experienced some form of amnesia – either partial (42%) or total (58%). We are unable to differentiate between amnesia due to trauma (peritraumatic dissociation) and amnesia due to alcohol or substance use.

Substance use was widely prevalent in our sample: 60% reported consuming alcohol prior to the sexual assault and 16% reported using drugs. In total, most patients (63%) reported some type of substance use, of which 96 reported use of both alcohol and drugs. When asked about their drinking habits, 57% responded that they drink alcohol occasionally, and 14% drink either regularly (9%) or daily (5%). When asked about their drug habits, 22% responded that they use drugs occasionally, and 8% use drugs either regularly (5%) or daily (3%). Among those using drugs, the most frequently cited drugs were cannabis or hashish (81%), cocaine (31%) and ecstasy or MDMA (10%).

Approximately one quarter of the patients were unable to recall or specify which types of penetration (if any) they were subjected to, because of amnesia. Vaginal penetration was reported by 67%, anal penetration by 17% and oral penetration by 21% (table 3). One hundred and ninety-one patients reported more than one penetration site (2 sites penetrated n = 145, 3 sites penetrated n = 46). Of the people who reported vaginal penetration, penile penetration was reported in 85% of cases and digital penetration in 40% of cases. Ejaculation was reported in 34% of sexual assaults with vaginal-penile penetration.

Of the people who reported anal penetration, penile penetration was reported in 75% of cases and digital penetration in 33% of cases. Ejaculation was reported in 13% of sexual assaults with anal-penile penetration. For 66 patients, the sexual assault was the victim's first vaginal penetration (9%). In line with the age structure of the sample, 6% of the patients confirmed that they had undergone menopause. 31% of the patients were currently using some form of contraception, while 9% of the total sample was menstruating at the time of the assault and 1% was pregnant.

Almost 60% declared that a condom was not used during the assault, and only 6% of the victims noted the use of a condom. 32% were unsure if a condom was used or not, due to amnesia. The use of physical or psychological violence was described in 48% of sexual assaults, with 22% of the patients being unsure due to amnesia. Of the patients who experienced violence, 95% described it as physical and 32% described experiencing psychological abuse. Various types of physical violence were employed, such as being held down against their will, being hit (36%), shoved or pushed (31%), strangled (25%), held by their hair (15%) or bitten (7%). The use of a weapon was recorded in 31 sexual assault cases, with knives being the weapon most frequently used.

The forensic doctors recorded body injuries in 84% of the sexual assault reports (figure 3). The sites of injury in decreasing order of frequency were lower limb injuries (75%) and upper limb injuries (72%), followed by injuries to the torso (31%), head/face (24%), back (20%), neck (19%) and buttocks (15%).

Gynaecological exam

Of the 740 patients reporting sexual assault, 23 forwent the gynaecological exam for various reasons, the most common being that the patient refused the exam (n = 16). Gy-

Table 3:
Sexual assault penetration sites and penetrant types (penile, digital, tongue, object, other) (n = 740). All data are n (row percentage). There may be more than one penetration site or penetrant type per person (4% reported no penetration, 72% reported at least one penetration site, 24% reported not knowing or not remembering if there was penetration).

Penetration site	Yes	No	Unknown (amnesia)	Penile penetration	Ejaculation (Yes)	Ejaculation (No)	Ejaculation unknown (amnesia)	Digital (finger)	Tongue	Object	Other
Vaginal	485 (67%)	59 (8%)	182 (25%)	410 (85%)	140 (34%)	95 (23%)	175 (43%)	196 (40%)	21 (4%)	8 (2%)	4 (1%)
Anal	122 (17%)	407 (57%)	191 (27%)	91 (75%)	12 (13%)	29 (32%)	49 (54%)	40 (33%)	3 (2%)	3 (2%)	–
Oral	154 (21%)	378 (52%)	190 (26%)	150 (97%)	28 (19%)	84 (57%)	36 (24%)	4 (3%)	5 (3%)	0	–

naecological exam data were not available for an additional 12 study participants.

Genital injuries

Of the 705 patients who underwent gynaecological examination, 24% presented with genital injury. Among the 467 reporting vaginal penetration, the percentage of genital injury was 28% (table 4). Genital injuries were present in 21% of the patients aged 19–49, in 30% of patients aged 14–19 and 33% of patients aged 50–93. The earlier the examination, the more frequently genital injury was observed (<24 h: 27%, 24 h–72 h: 25%), progressively decreasing to 16% detection at 72 h – 1 week and finally 12% at 1 week or more. Genital injuries were observed in 38% of sexual assaults involving more than one perpetrator and in 25% of sexual assaults with a single perpetrator.

When the survivor knew the assailant, the percentage of genital injury was 24% while it was 31% when they did not know the assailant. Digital vaginal penetration (penetration by finger) and penile-vaginal penetration had similar rates of genital injury (28% and 27%, respectively). There were 7 cases of vaginal penetration with an object, of which 3 (43%) presented with genital injury. Vulvar injury was the most frequent site for genital injury, specifically on the inner labia (7%), posterior commissure (5%) and outer labia (5%) (figure 4).

Anal injuries

Of the 705 patients who underwent a gynaecological examination, 5% presented with anal injury. Among the 113 patients reporting anal penetration, 21% presented with anal injury (table 5).

Additional results

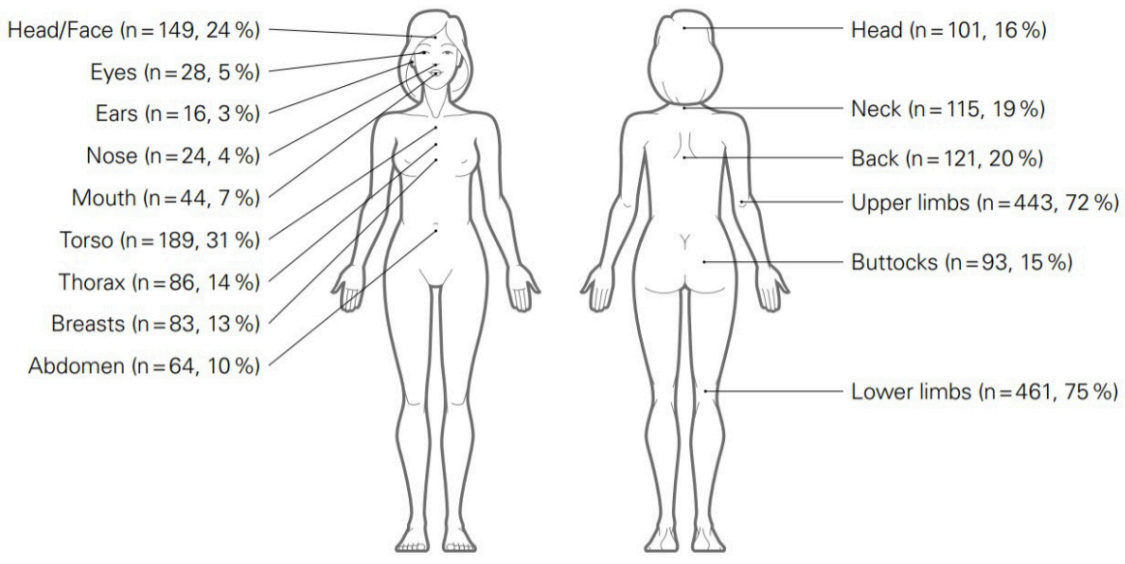
Table 6 presents the distribution of key factors by timing of medico-legal consultation. Police or prosecutor-mandated cases, unknown assailant, and reported alcohol use before the assault were more frequently documented among early consultations (<24 h), while late consultations (≥24 h) included more older individuals and cases involving a known perpetrator. Reports of multiple penetrants were uncommon and somewhat more frequent in late consultations. Object penetration was rarely reported; most vaginal object penetration cases were documented in late consultations, while anal object penetration cases more often occurred in early consultations.

Of the patients who were not using a form of contraception, were not pregnant or postmenopausal, 264 reported penile-vaginal penetration and/or penile-anal penetration. Of these 264 patients, 118 received emergency contraception (45%) while 34 (13%) did not. The reason that the 34 eligible patients did not receive emergency contraception was either because they refused or the reason that no contraception was given was unknown. It is unknown whether 111 patients (42%) received emergency contraception or not.

Antibiotic prophylaxis for gonorrhoea (ceftriaxone 500 mg) was prescribed for 29% of the victims, while antibiotic prophylaxis for chlamydia (azithromycin 1 g) was prescribed for 34% of the victims. Similarly, post-exposure prophylaxis to protect against HIV infection (HIV-PEP emtricitabine/tenofovir and lopinavir/ritonavir) was prescribed in 31% of cases, while its prescription is unknown for 42% of cases (table 7). In Geneva, 35% of the patients were recommended to attend a follow-up appointment with an infectious disease specialist.

Victim alcohol consumption varied by perpetrator type. Among survivors assaulted by acquaintances, alcohol use prior to the assault was reported in 50% of cases, and in 63% of cases when the perpetrator was unknown. The highest proportion was observed when the survivor experienced amnesia (80%). In contrast, alcohol consumption was less frequently reported among survivors assaulted by current intimate partners (22%) or family members (31%). Alcohol use was also reported for 44% of cases involving former intimate partners and 57% of assaults by authority figures or care providers (table 8).

Figure 3: Body injuries according to site (n = 619, 84%).



Discussion

Our study highlights the key sociodemographic and assault characteristics of victims reporting sexual assault between 2018 and 2021 in the cantons of Geneva and Vaud, Switzerland. These results can inform evidence-based prevention, care and education campaigns against sexual assault for both men and women, also addressing attitudes and behaviours toward rape and rape culture, to prevent sexual assault and to dispel rape myths. In addition, it informed the development of an electronic sexual assault report medicolegal file and a prospective multicentre study on people reporting sexual assault at the obstetrics and gynaecology emergency departments of the cantons of Geneva, Valais, Vaud and Ticino that started in 2022.

Prevention

Rape does not necessarily involve a stranger. One of the more common myths about rape and sexual assault is that rape usually involves a stranger. However, as has also been shown in large-scale surveys of violence and gender relations, our results highlight that rape does not necessarily involve a stranger, since 58% of the patients who have consulted our services reported knowing the assailant [41]. However, the population who consulted the emergency departments differs from the population that attended the LAVI centres. In comparison to the clients of the LAVI centres, our population is younger, and the assailant is not often an intimate partner, but rather a friend, colleague or acquaintance (53%). Anyone who has suffered direct physical, psychological or sexual harm as a result of a crime is entitled to the support provided by this law (LAVI). Victims of intimate partner violence may report the sexual assault less frequently, or never, or somewhere other than the emergency department. This is important not only from an epidemiological perspective, but critical when planning how to provide medical treatment and follow-up for different populations and when planning sensitisation and training of healthcare professionals.

Table 4:
Frequency of genital injuries among patients who underwent a gynaecological examination (n = 705). All data expressed as n (row percentage).

Variable	Responses	All	No genital injury	Genital injury
		n = 705	**n = 533**	**n = 172**
Age	14–19	212	148 (70%)	64 (30%)
	20–49	451	357 (79%)	94 (21%)
	50–93	42	28 (67%)	14 (33%)
Time to examination	<24 hours	357	260 (73%)	97 (27%)
	24–72 hours	223	168 (75%)	55 (25%)
	72 hours – 7 days	91	76 (84%)	15 (16%)
	>1 week	32	28 (88%)	4 (12%)
	Not applicable	2	1	*1*
Known assailant	No	196	135 (69%)	61 (31%)
	Yes	409	311 (76%)	98 (24%)
	Unknown (amnesia)	100	87 (87%)	13 (13%)
Number of perpetrators	One	541	406 (75%)	135 (25%)
	Multiple	52	32 (62%)	20 (38%)
	Unknown (amnesia)	112	95 (85%)	17 (15%)
Vaginal penetration	No	47	42 (89%)	5 (11%)
	Yes	467	338 (72%)	129 (28%)
	Unknown (amnesia)	177	145 (82%)	32 (18%)
	Not applicable	*14*	*8*	*6*
Vaginal penetration – penis	No	118	91 (77%)	27 (23%)
	Yes	396	289 (73%)	107 (27%)
	Unknown (amnesia)	177	145 (82%)	32 (18%)
	Not applicable	*14*	*8*	*6*
Vaginal penetration – finger(s)	No	331	248 (75%)	83 (25%)
	Yes	183	132 (72%)	51 (28%)
	Unknown (amnesia)	177	145 (82%)	32 (18%)
	Not applicable	*14*	*8*	*6*
Vaginal penetration – object(s)	No	507	376 (74%)	131 (26%)
	Yes	7	4 (57%)	3 (43%)
	Unknown (amnesia)	177	145 (82%)	32 (18%)
	Not applicable	*14*	*8*	*6*
Number of vaginal penetrants	None	50	43 (86%)	7 (14%)
	Single	342	249 (73%)	93 (27%)
	Multiple	122	88 (72%)	34 (28%)
	Unknown (amnesia)	177	145 (82%)	32 (18%)
	Not applicable	*14*	*8*	*6*
Anal penetration	No	386	289 (75%)	97 (25%)
	Yes	113	77 (68%)	36 (32%)
	Unknown (amnesia)	186	154 (83%)	32 (17%)
	Not applicable	*20*	*13*	*7*

Weekends/summer

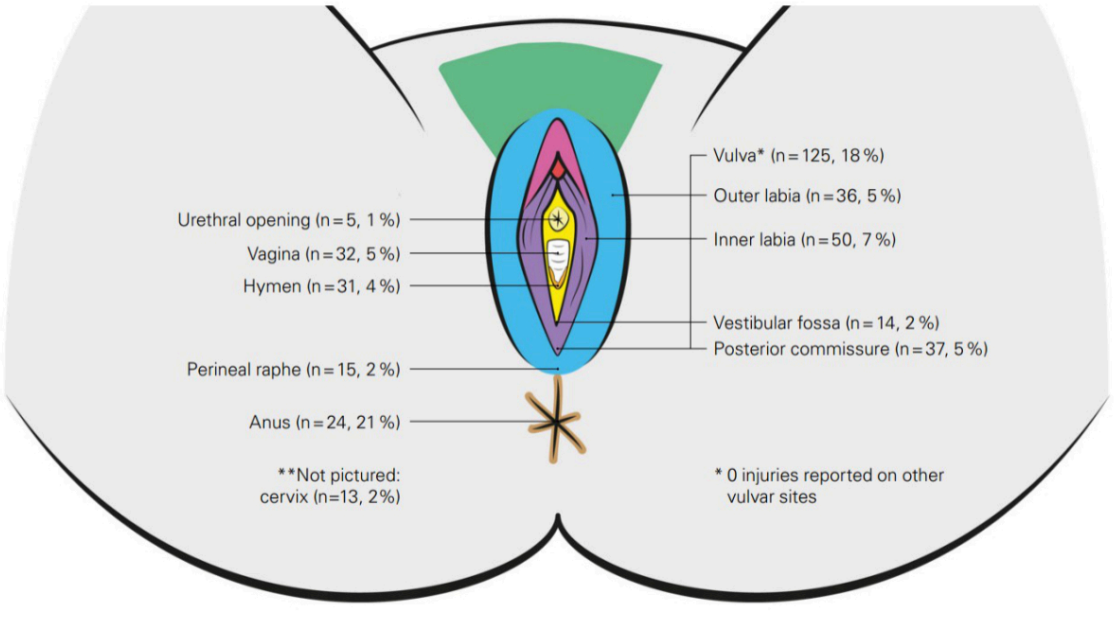
Our results highlight a key message to help improve service provision for victims of sexual assault as well as prevention and education strategies: sexual assault reporting at emergency departments is more frequent during the summer months and at weekends. Swiss hospital emergency departments should be aware of the increased incidence of sexual assaults during these times and plan accordingly. A report analysing seasonal patterns of crime from 1993 to 2010 in the United States showed similar results in that rape and sexual assault rates were higher during the summer than winter, spring and autumn [42]. However, it is unknown why these crimes are more likely to occur during the summer and whether it is related to the temperature, more hours of daylight, more flexible vacation-like schedules or a different amount of layers of clothes for both the victim and the assailant [43]. A report analysing sexual assault patterns by day of the week in the UK also showed similar results with more sexual assaults occurring at weekends (Friday, Saturday, Sunday). The authors also found that as the weather improved, more people were socialising outdoors, and for longer and later, leading to an increase of sexual assault [43]. Prevention efforts and education campaigns could be in full effect during summer festivals and summer nightlife activities, including bringing attention to and dispelling rape myths originating from common stereotypes [44].

This study has informed a prevention campaign in Valais, Vaud and Geneva. Prevention messages and education on what to do in case of sexual assault, such as when, where and why to consult an emergency department will be addressed. The official Vaud website already explains where and how to seek medical care after a sexual assault [45]. The Geneva canton website mainly refers to the police and mentions the possibility of consulting the hospital to collect evidence of the assault [46]. Available information could be updated with clear indications on how the evidence is collected and the healthcare that victims can and will receive, even when they do not want to collect evidence and press charges but simply receive prophylactic treatments, counselling, information and psychological support.

Amnesia, substance use, trauma

Many cross-sectional studies have found a significant relationship between alcohol consumption (by the victim, the perpetrator or both) and sexual assault [32, 47–49]. Alcohol is commonly noted as a risk factor for sexual assault perpetration, with 34% to 74% of sexual violence perpetrators reporting alcohol use at the time of the sexual assault [50–52]. Alcohol and drug use decreases the victim's and perpetrator's risk perception and increases vulnerability for exposure to violence [50, 53]. In line with previous publications, alcohol and drug use were prevalent in patients reporting sexual assault within our population. Toxicological investigations were not systematically performed and thus we were unable to evaluate the alcohol and drug use of the alleged sexual assault perpetrators. Within the Geneva and Lausanne population of patients reporting sexual assaults, 60% said that alcohol was involved. In comparison to a previous study carried out in University of Geneva Hospitals, alcohol was consumed by 48% of the population presenting for sexual assault [47]. The fact that children were included in the previous study may explain why alcohol was less frequently found. While other studies reported drug use in up to 34% of sexual assaults, 16% of our victim population reported consuming drugs prior to the assault (n = 121) [54]. Some researchers differentiate between substance-related victimisation or incapacitated rape and forcible rape [28, 30]. In these papers, forcible rape involves the use of physical force or threat of force or harm. Incapacitated rape is usually associated with their

Figure 4: Ano-genital injuries (n = 196, 28%) according to site among patients who underwent a gynaecological exam (n = 705). Anal injury (n = 24, 21%) among patients who underwent a gynaecological exam and reported anal penetration (n = 113). Genital injury (n = 129, 28%) among patients who underwent a gynaecological exam and reported vaginal penetration (n = 467). Illustration: Romain Dewaele © https://www.unige.ch/ssi



"voluntary consumption" or an intake of substances without knowledge: "drug- or alcohol-facilitated rape". Such differentiation has been thought to be useful to inform prevention and information campaigns and be part of a minimum dataset on sexual assault [48, 53]. According to a review by Testa and Livingston, "it appears that most incidents of incapacitated rape follow voluntary consumption of large amounts of alcohol as opposed to deliberate intoxication of the woman by a perpetrator", particularly among younger women [48]. Alcohol use is less frequently involved in sexual assaults among current intimate partners than any other type of relationship, which is also reflected among our population (table 8) [48]. Alcohol can be associated with an increased risk of sexual assault, particularly by non-intimate partners [55, 56]. Risk increases with heavy alcohol use [48]. WHO defines heavy episodic drinking (HED) as consuming at least 60 grams or more of pure alcohol during a single occasion [57]. Consumption of 60 grams of pure alcohol approximately corresponds to 6 standard alcoholic drinks (for example, a 100 ml serving of 12% wine contains 9.6 g ethanol while a 300 ml serving of 4.5% beer contains 10.8 g ethanol) [57, 58]. For future research and prevention efforts, we would like to be able to differentiate between heavy episodic drinking and other types of consumption. Knowing more about this could inform prevention and risk reduction programmes. Future prevention campaigns in Switzerland could use our data to promote awareness on safe and consensual sex when alcohol is involved and engaging in a community-based approach to avoid placing the burden of prevention only on the women. Heavy alcohol use might contribute to amnesia; indeed half of the patients who reported alcohol consumption also reported amnesia vs fewer than 15% among those who did not drink alcohol. However, we are unable to draw conclusions from our sample about when and how amnesia is related to alcohol or other substance consumption, trauma or several associated causes. Peritraumatic dissociation is defined as "a complex array of reactions at the time of a trauma that include depersonalisation, derealisation, dissociative amnesia, out-of-body

Table 5:
Frequency of anal injuries among patients who underwent a gynaecological examination (n = 705). All data expressed as n (row percentage).

Variable	Responses	All	No anal injury	Anal injury
		n = 705	n = 667	n = 38
Age	14–19	212	206 (97%)	6 (3%)
	20–49	451	423 (94%)	28 (6%)
	50–93	42	38 (90%)	4 (10%)
Time to examination	<24 hours	357	337 (94%)	20 (6%)
	24–72 hours	223	210 (94%)	13 (6%)
	72 hours – 7 days	91	87 (96%)	4 (4%)
	>1 week	32	31 (97%)	1 (3%)
	Not applicable	2	2	0
Known assailant	No	196	183 (93%)	13 (7%)
	Yes	409	387 (95%)	22 (5%)
	Unknown (amnesia)	100	97 (97%)	3 (3%)
Number of perpetrators	One	541	512 (95%)	29 (5%)
	Multiple	52	48 (92%)	4 (8%)
	Unknown (amnesia)	112	107 (96%)	5 (4%)
Anal penetration	No	386	380 (98%)	6 (2%)
	Yes	113	89 (79%)	24 (21%)
	Unknown (amnesia)	186	180 (97%)	6 (3%)
	Not applicable	*14*	*18*	*2*
Anal penetration – penis	No	415	406 (98%)	9 (2%)
	Yes	84	63 (75%)	21 (25%)
	Unknown (amnesia)	186	180 (97%)	6 (3%)
	Not applicable	20	18	2
Anal penetration – finger(s)	No	462	436 (94%)	26 (6%)
	Yes	37	33 (89%)	4 (11%)
	Unknown (amnesia)	186	180 (97%)	6 (3%)
	Not applicable	20	18	2
Anal penetration – object	No	496	467 (94%)	29 (6%)
	Yes	3	2 (67%)	1 (33%)
	Unknown (amnesia)	186	180 (97%)	6 (3%)
	Not applicable	20	18	2
Number of anal penetrants	None	386	380 (98%)	6 (2%)
	Single	102	80 (78%)	22 (22%)
	Multiple	11	9 (82%)	2 (18%)
	Unknown (amnesia)	186	180 (97%)	6 (3%)
	Not applicable	20	18	2
Vaginal penetration	No	47	40 (85%)	7 (15%)
	Yes	467	445 (95%)	22 (5%)
	Unknown (amnesia)	177	169 (95%)	8 (5%)
	Not applicable	*14*	*13*	*1*

Table 6:
Factors according to timing of sexual assault medicolegal consultation. All data are expressed as n (row percentage).

Variable	Modality	All*	Late (≥24 hours) consultation	Early (<24 hours) consultation
		n = 738	n = 364	n = 374
Mandated by police or public prosecutor	No	440	252 (57%)	188 (43%)
	Yes	298	112 (38%)	186 (62%)
Age	14–19	220	101 (46%)	119 (54%)
	20–49	474	238 (50%)	236 (50%)
	50–93	44	25 (57%)	19 (43%)
Use of physical violence	No	235	119 (51%)	116 (49%)
	Yes	336	172 (51%)	164 (49%)
	Unknown (amnesia)	159	70 (44%)	89 (56%)
	Missing	8	3	5
Weapon	No	536	270 (50%)	266 (50%)
	Yes	31	18 (58%)	13 (42%)
	Unknown	162	72 (44%)	90 (56%)
	Missing	9	4	5
Amnesia	No	473	233 (49%)	240 (51%)
	Yes	265	131 (49%)	134 (51%)
Known assailant	No	206	88 (43%)	118 (57%)
	Yes	430	240 (56%)	190 (44%)
	Unknown (amnesia)	102	36 (35%)	66 (65%)
Number of perpetrators	One	568	291 (51%)	277 (49%)
	Multiple	56	29 (52%)	27 (48%)
	Unknown (amnesia)	114	44 (39%)	70 (61%)
Alcohol before assault	No	262	157 (60%)	105 (40%)
	Yes	442	183 (41%)	259 (59%)
	Unknown	33	23 (70%)	10 (30%)
	Missing	1	1	0
Drugs before assault	No	611	310 (51%)	301 (49%)
	Yes	121	52 (43%)	69 (57%)
	Missing	6	2	4
Vaginal penetration	No	59	31 (53%)	28 (47%)
	Yes	485	244 (50%)	241 (50%)
	Unknown (amnesia)	180	85 (47%)	95 (53%)
	Missing	14	4	10
Vaginal penetration – Penis	No	134	64 (48%)	70 (52%)
	Yes	410	211 (51%)	199 (49%)
	Unknown (amnesia)	180	85 (47%)	95 (53%)
	Missing	14	4	10
Vaginal penetration – Finger(s)	No	348	177 (51%)	171 (49%)
	Yes	196	98 (50%)	98 (50%)
	Unknown (amnesia)	180	85 (47%)	95 (53%)
	Missing	14	4	10
Vaginal penetration – Object(s)	No	536	268 (50%)	268 (50%)
	Yes	8	7 (88%)	1 (12%)
	Unknown (amnesia)	180	85 (47%)	95 (53%)
	Missing	14	4	10
Number of vaginal penetrants	None	62	32 (52%)	30 (48%)
	Single	350	170 (49%)	180 (51%)
	Multiple	132	73 (55%)	59 (45%)
	Unknown (amnesia)	180	85 (47%)	95 (53%)
	Missing	14	4	10
Anal penetration	No	407	199 (49%)	208 (51%)
	Yes	122	67 (55%)	55 (45%)
	Unknown (amnesia)	189	89 (47%)	100 (53%)
	Missing	20	9	11
Anal penetration – Penis	No	438	210 (48%)	228 (52%)
	Yes	91	56 (62%)	35 (38%)
	Unknown (amnesia)	189	89 (47%)	100 (53%)
	Missing	20	9	11
Anal penetration – Finger(s)	No	489	248 (51%)	241 (49%)
	Yes	40	18 (45%)	22 (55%)

	Unknown (amnesia)	189	89 (47%)	100 (53%)
	Missing	20	9	11
Anal penetration – Object(s)	No	526	265 (50%)	261 (50%)
	Yes	3	1 (33%)	2 (67%)
	Unknown (amnesia)	189	89 (47%)	100 (53%)
	Missing	20	9	11
Number of anal penetrants	None	407	199 (49%)	208 (51%)
	Single	110	59 (54%)	51 (46%)
	Multiple	12	8 (67%)	4 (33%)
	Unknown (amnesia)	189	89 (47%)	100 (53%)
	Missing	20	9	11
Oral penetration	No	378	187 (49%)	191 (51%)
	Yes	154	82 (53%)	72 (47%)
	Unknown (amnesia)	188	87 (46%)	101 (54%)
	Missing	18	8	10

* Time to consultation was missing for 2 women.

Table 7:
Frequency of treatment and follow-up appointment. All data are expressed as n (row percentage).

Variable	Modality	n
Emergency contraception prescribed, n = 740	No	261 (35%)
	Yes	225 (30%)
	Missing	254 (34%)
Gonorrhoea prophylaxis (ceftriaxone), n = 740	No	135 (18%)
	Yes	213 (29%)
	Missing	392 (53%)
Chlamydia prophylaxis (azithromycin), n = 740	No	120 (16%)
	Yes	251 (34%)
	Missing	368 (50%)
	Not applicable	1
Hepatitis B immunoglobulin/vaccine, n = 740	No	273 (37%)
	Yes	111 (15%)
	Missing	353 (48%)
	Not applicable	3
PEP starter and PEP prescribed, n = 740	No	201 (27%)
	Yes	226 (31%)
	Missing	311 (42%)
	Not applicable	2
Appointment with Infectious Disease department proposed (HUG), n = 440	No	73 (17%)
	Yes	154 (35%)
	Missing	213 (48%)
	Not applicable	1
UIMPV appointment proposed (HUG) , n = 440	No	49 (11%)
	Yes	218 (50%)
	Missing	173 (39%)

UIMPV: Interdisciplinary Unit of Medicine and Prevention of Violence.

Table 8:
Alcohol consumption according to perpetrator type (when known). All data are expressed as n (row percentage).

Type of perpetrator	n	No alcohol	Alcohol	Unknown consumption
		n = 264	n = 442	n = 33
Friend/colleague/peer/acquaintance	226	93 (41%)	127 (56%)	6 (3%)
Unknown (perpetrator unknown to survivor)	206	51 (25%)	142 (69%)	13 (6%)
Unknown (amnesia)	103	10 (10%)	90 (87%)	3 (3%)
Current intimate partner	73	45 (62%)	22 (30%)	6 (8%)
Other (known to survivor)	39	17 (44%)	19 (49%)	3 (8%)
Former intimate partner	37	19 (51%)	16 (43%)	2 (5%)
Other (unknown to survivor)	14	2 (14%)	11 (79%)	1 (7%)
Family member	13	7 (54%)	6 (46%)	0 (0%)
Social network/internet acquaintance	12	8 (67%)	4 (33%)	0 (0%)
Authority figure/care provider	10	9 (90%)	1 (10%)	0 (0%)
Missing	6	3 (50%)	3 (50%)	0 (0%)
Not applicable	1	Not applicable	1	Not applicable

experiences, emotional numbness and altered time perception" [59]. Previous studies found correlations between such peritraumatic dissociations and acute stress disorder and post-traumatic stress disorder [59–61]. Training to increase professionals' knowledge and recognition of risk factors associated with acute stress disorder could improve the healthcare of those patients that require interventions in the acute phase to decrease the risk of developing a mental health disorder [61].

Revictimisation

Having previously experienced sexual assault is a key vulnerability factor for sexual revictimisation [62–64]. A similar 10-year retrospective Italian study found that 26.7% of the women reporting sexual assault had been previously exposed to sexual assault. Among our sample, 19% of the sexual assaults reported were among patients who had already experienced at least one prior sexual assault, while 64% of the sexual assault reports were missing information on whether a prior assault had occurred. In a recently published meta-analysis, almost 50% of all child sexual abuse victims are sexually revictimised at some point in the future [64]. Such a high prevalence of revictimisation highlights the need to systematically ask any patient whether they are experiencing violence or whether they have experienced violence, in order to provide necessary support. It also highlights the need to inform both patients and health professionals that a previous assault increases the risk of experiencing another assault so that this can be eventually prevented or treated accordingly. Recently, researchers have found a relationship between hypersexuality or compulsive sexual behaviour and experienced trauma [65, 66]. Post-traumatic symptoms could lead to compulsive sexual behaviour through the pathway of depression, shame and guilt [66].

Care

Medicolegal sexual assault consultations take place within the emergency department setting, usually within a short time frame making them a unique opportunity to provide patients with the necessary treatment for STIs, unwanted pregnancy and mental health symptoms. In our sample, 83% of the patients sought consultation for their sexual assault within 72 hours. Only 31% (n = 230) reported that they were using a contraceptive, which is extremely low in comparison to the two thirds of women using one or more contraceptive methods, as reported by the Federal Statistical Office [67]. Furthermore, only between 6% and 11% of our sample reported that a condom was used in the assault. The emergency contraceptive (ulipristal acetate 30 g or a copper intrauterine device) can be taken up to 5 days (120 hours) of unprotected sex. Such information should be widely available in information campaigns. 31% of the patients received the Post-Exposure Prophylaxis starter kit, until they had a follow-up meeting with the infectious diseases specialists (HUG) or the gynaecologist (CHUV). Missing information on the patient's sexual assault report regarding treatments was a limitation of our retrospective review. Many reports did not include information on follow-up treatment and appointments. (Missing data: Infectious disease follow-up: 61%, Emergency contraception: 34%, Prophylactic antibiotics for gonorrhoea: 53%, Prophylactic antibiotics for chlamydia: 50%.) For comparative purposes, a US study looking at 939 sexual assault records and medications prescribed following emergency room visits found that 45.3% of the patients received emergency contraception while 97.3% did not receive antiviral post-exposure prophylactic medication. It also found that victims of sexual assault perpetrated by an intimate partner had a 48% decreased likelihood of being prescribed antibiotics and emergency contraception [68]. Studies as well as our clinical experience show that factors such as a patient's concern for STIs, HIV and pregnancy are associated with treatment-seeking behaviour [69, 70]. Future prospective studies can add information on indications, prescriptions, acceptance and compliance with antibiotics, antiretrovirals and emergency contraception that we are currently unable to explore. Our protocols do not contain recommendations and information on the Human Papilloma Virus (HPV). However, people who have been sexually assaulted are at risk of acquiring HPV infection and the efficacy of the HPV vaccine is high. Given the age of the population in this cohort, information and care could also address HPV, cervical screening and vaccination of HPV where relevant [71, 72].

COVID-19

Many studies found a significant decrease in the number of patients presenting for emergency care services during the COVID-19 pandemic, including women seeking emergency care for sexual assault [73–77]. The literature shows that reported sexual assault cases dropped to between 30% and 50% during the early days of the pandemic [76, 77]. Potential hypotheses include the reduction of some forms of sexual violence during this period, fear of exposure to COVID-19 in the emergency departments and lack of awareness of availability of services. While there may have been fewer absolute cases of sexual assault reported, the perpetrator was more likely to be the intimate partner, ex-intimate partner or family member compared with pre-COVID-19 reports [76, 77]. Many countries have reported an increase in domestic violence during the COVID-19 pandemic, in particular a higher incidence and severity of violence [78, 79]. While we do not have data on domestic violence reports during the pandemic, our results also show that fewer women reported sexual assault at the Geneva and Lausanne University Gynaecological ED in 2020 than in 2018, 2019 and 2021.

Injury detection / documentation of evidence

Medicolegal research has proven that documented injury can be an important factor in predicting the outcome of sexual assault prosecution and thus injury documentation is important in the forensic examination of sexual assault victims [80–82]. 45% of our patients bathed or washed themselves prior to coming to the emergency department. Although it is still possible to collect evidence, it is best not to bathe, shower, brush teeth or go to the bathroom before coming for a medicolegal exam. Ano-genital injuries were more frequent in patients who were examined within 24 hours of the assault [83]. In the literature, ano-genital injury prevalence has been reported in a wide range of 6% to 87% of victims seeking emergency care for sexual assault [83]. Our study found that 28% (n = 196) of the vic-

tims had some type of ano-genital injury. Research on injuries from consensual sexual intercourse also shows that genital lesions are also present in a wide range of patients, from 6% to 73%, and after excluding minors, from 6% to 55% [84].

Genital injury

Research has shown that the examining person's experience and level of training in the detection of sexual assault injuries may influence the prevalence of genital injuries found [85, 86]. As the Geneva and Lausanne University Hospitals have residents at different stages of their training, there may be a variation of what junior and senior doctors detect as a genital injury. In Switzerland, the development of experts exclusively dedicated to documenting and caring for sexual assault victims has occurred in a few settings, such as the University of Zurich, which offers a Certificate of Advanced Studies (CAS) in Forensic Nursing. Another factor contributing to the sensitivity of ano-genital injury detection is whether gross visualisation, toluidine blue dye enhancement, colposcopy or anoscopy were used. Colposcopy is also used for documentation purposes, for interpretation and review by experts as well as for education purposes. Studies have shown that trained forensic doctors using colposcopy obtain evidence of ano-genital injury in 71% to 86% of rape victims [87, 88], which is higher than the 28% of ano-genital injuries found in our sample [88]. These same studies found that there was little difference in the detection of ano-genital injuries when gross visualisation and colposcopy were used, if the examiner is a highly trained sexual assault expert [80, 88]. In our study, we are unable to determine whether the colposcope was used systematically even though both CHUV and HUG protocols state that the colposcope should be systematically used. These findings may indicate the need to improve training in the ano-genital exam and use of colposcope by younger residents. Even though the gynaecological exam is conducted by the gynaecologists, the forensic residents are also present during the exam and experienced in detecting and recognising lesions. They can indeed contribute with the gynaecologist to the assessment and eventual interpretation of lesions.

Anal injury

Other prevalence studies of anal injuries following anal penetration vary with ranges from 16% to 22.3% [83, 89]. Our findings are reflected within this range, with anal injuries present in approximately 21% of the patients who reported anal penetration of any type (penile, digital or with an object). Anal injuries are progressively less frequently detected after 72 hours, which was also echoed in our study [51]. Anal penetration did not result in visible anal injury in the majority of cases. The external anal examination may be insufficient to visualise anal injury, and anoscopy may be required. Anal injury may also be minimised by the use of body fluids or other lubrication. No published studies have evaluated anal trauma resulting from consensual anal penetration [83]. More tears were identified on the anus following toluidine-blue as compared to direct visualisation, but not colposcopy [80].

Body injuries

We found similar results reconfirming what others have found – bodily injuries (non-genital) are more prevalent than ano-genital injuries in people who are sexually assaulted [83]. Body injuries were recorded in 84% of the sexual assault reports, with injuries to the upper and lower limbs being the most common sites. Forensic doctors recorded body injuries in 63% of the victims seeking emergency care for sexual assault in a study conducted at Geneva University Hospitals from 2005 to 2014 [47]. However, minor patients made up 26% of the sample, while our study included people aged 14 or older. The forensic doctors, even during residency, do not rotate and are trained and experienced in documenting and identifying body lesions. This is a part of their daily practice.

Reporting to police

In our study, 7% of the survivors clearly stated that they did not intend to press charges while 17% declared that they intended to bring charges against their aggressor; for an overwhelming 75% of the sexual assaults, we do not have further information because the information was not included in the report or because the victim had not yet decided if they would bring charges against the perpetrator. In the US, large-scale research studies suggest that only 5–20% of sexual assaults are reported to the police. In the UK, latest estimates from the Crime Survey for England and Wales (CSEW) showed that among people aged 16 to 59 years who were victims of sexual assault by rape or penetration above the age of 16, fewer than one in six (16%) female victims and fewer than one in five (19%) male victims reported it to the police [27]. To reiterate, there were 757 rapes reported in 2021 in the Swiss Police Crime Statistics, and 720 sexual assaults [25]. If we use the more conservative estimate that only 20% of sexual assaults are reported to the police, one could extrapolate a hypothetical estimate of the number of sexual assaults which would be much higher than 700 (3785 rapes and 3600 sexual assaults). There are a wide range of reasons that victims do not report sexual assault to the police such as being ashamed, not having faith in the criminal justice system, fear of retaliation, etc. Research also shows that many people who have been sexually assaulted do not necessarily recognise it as such and therefore do not report [90, 91]. This may also lead to revictimisation.

Most of the sample included people from Switzerland (39%) or other European countries (20%). Even though the cantons of Vaud and Geneva differ in terms of foreign population (34% for Vaud and 41% for Geneva), one might wonder if non-Swiss people consult less frequently after a sexual assault because of economic, insurance, language, access, cultural or information barriers [45, 92]. Future information and prevention campaigns could investigate and eventually target/include specifically non-Swiss populations.

Strengths

We describe the use of a reproducible medicolegal protocol for caring for people who are sexually assaulted as well as the forms for reporting their characteristics at the obstetrics and gynaecology emergency departments in two Swiss

cantons. HUG and CHUV are the two largest hospitals in the French-speaking part of Switzerland. We had a large data sample of 740 patients between 2018 and 2021. Because of the careful attention to definitions used for each variable, our study is easily reproducible either in another Swiss canton or in another country.

Limitations

A large number of people will never report sexual assault to any type of official agency – whether hospital, police or other – and no extraction of administrative data will provide statistics about the extent of hidden sexual assault [24].

Incomplete data: Although both centres collect the same information, the requirements for which questions need a response varies between sites. Demographic data are missing from the reports, which highlights the importance of a nationally standardised database with a pre-defined minimum dataset, including, for example, nationality.

Amnesia: Approximately 25% of the patients in our study reported some kind of amnesia, either total or partial. This has a profound impact on the amount of available and exploitable data but is itself an important finding as discussed above. Amnesia could be a manifestation of the trauma of sexual assault (peritraumatic dissociation) or linked with substance use. Future studies need to take it into account in their design and data interpretation.

While we paid careful attention to the definitions of every variable used, there is no existing international classification or terminology to define and describe the injury types that should be used for each anatomical site. Furthermore, although we are unable to provide data on the sexual orientation or gender identity of the patients due to the retrospective nature of the study, we will aim to capture this information in future studies.

When the patients leave the emergency care facilities, they are given follow-up appointments. We are unable to provide data on the short-, medium- and longer-term care they received. Whether they attend the follow-up visits, whether they adhere to the treatment protocols, etc, remains part of the information gap that, we hope, will be covered by our ongoing prospective study.

Conclusion and recommendations

There is a lack of data regarding sexual assault or rape in Switzerland. Reliable national and regional measurements of sexual assault and its health and social consequences can inform the design of effective social, economic, political and health responses. In addition, data are crucial to assess the effects of eventual prevention and support strategies and interventions, to prevent sexual assault and to dispel rape myths. We would like to further emphasise the need to collect data from various sources such as LAVI, police and other associations such as “Viol secours” in addition to the hospital data, because these different sources often receive different populations who have varying experiences and needs. Our hope is to create a national observatory of sexual assault reports in Swiss hospitals.

Approaches to gathering hospital data should be made uniform across Switzerland. We recommend a minimum dataset with a standardised set of variables to be collected across the country’s hospitals where sexual assaults can be reported. Common variable names, response options and definitions should be shared between all sites.

Creating a national observatory and minimum dataset requires the full support of the federation and collaboration between many different entities including emergency gynaecological and medicolegal departments. In examples of other mandatory registries, there is usually a legal mandate/law requiring the cantons or institutions to report certain data. For example, the Oncological Disease Registration Act (LEMO RS 818.33) requires doctors, laboratories, hospitals and other private or public institutions in Switzerland to declare cancer and tumour data to a national registry with the aim of creating a complete and fully exhaustive registry of oncological diseases in Switzerland. Similarly, the Swiss Neonatal Network & Follow-up Group (SwissNeoNet) created a Swiss Minimal Neonatal DataSet. All Swiss level III and level IIB institutions are required to provide hospital data for the registry thanks to the Inter-Cantonal Declaration for Highly Specialised Medicine (HSM) of 22 September 2011 [93].

Collection of a standardised sexual violence dataset at all locations where medicolegal exams are carried out in Switzerland could improve healthcare professionals’ standardisation in their documentation and coding. Classifications, such as the WHO’s International Classification of Diseases and Related Health Problems (ICD), provide a nationally and internationally comparable system for reporting and recording statistics on diseases and related health problems [94]. Standardised nomenclatures and classifications help public health authorities, professionals from different sectors (care, police, legal, associations and education) and the general public to record information about risk factors, sociodemographic characteristics, the experience of care and follow-up treatment of sexual assault. Recording data based on an aligned set of variables would allow the creation of a national dataset which could be used to analyse similarities and differences in types of sexual assaults, survivors and perpetrators, which healthcare services are being accessed and what resources are required for planning purposes and to improve access, care and healthcare experiences [95].

Data sharing statement

The deidentified data (including data dictionary) from this study, the analytical code used, the study protocol along with data from the prospective study will be shared in an open data repository once the prospective study results are available in late 2025 or early 2026.

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Potential competing interests

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflict of interest related to the content of this manuscript was disclosed.

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Appendix

Characteristics

Demographic Characteristics

Civil Status: Civil status according to patient's sexual assault report: single, married, divorced, cohabitation, separated, widowed or unknown.

Patient's Nationality (Region): Regions were determined by patient's nationality. Switzerland, Europe, Americas, Sub-Saharan Africa, Middle East and North Africa, Asia, Pacific and Unknown. If patient had dual Swiss-citizenship, they were included as Swiss.

Known/unknown alleged perpetrator: a patient identifies whether they knew their perpetrator prior to the assault. In the event that there were multiple assailants, it is possible that the survivor may have known one and not the other(s).

Patient/perpetrator(s) relationship: Based on UN Women and WHO Proposed Response Options and Recommended Definitions for Minimum Data Set [94]: Current intimate partner, Former intimate partner, Family member, Friend/colleague/peer or acquaintance, Authority figure/care provider, Other—known to survivor, Other—unknown to survivor.

Season: Winter: December, January, February; Spring: March, April, May; Summer: June, July, August; Fall: September, October, November

Location: Based on UN Women and WHO Proposed Response Options and Recommended Definitions for Minimum Data Set [57]: Home: home of victim, home of perpetrator, home of victim and perpetrator, Friend's home; Public: street, open area, public transport, public toilets, forest, park; School; Institution: prison; Institutional care setting: hospitals, psychiatric facilities, residential care; Work; Other

Assault Characteristics

Mandated by the Police or the public prosecutor: In Switzerland, police investigate sexual assault ex-officio (with the exception of sexual harassment, prosecuted on complaint). When the patient comes to the local hospital with the help of the authorities, the process is called "mandated by the Police or the public prosecutor or under mandate". When the patient comes to the hospital on her own volition without the assistance of the local authorities, the process is not "mandated by the Police or the public prosecutor". Even without a mandate, the patient can decide if they want to press charges at any point during or after the medico-legal examination.

Gynecological Exam: Examination and documentation of the presence or absence of ano-genital lesions by a gynecologist using "direct visualization" and colposcopy, without staining techniques to examine the vulva, urethral opening (meatus), vagina, hymen, cervix, perineal raphe, anus and rectum.

Bacteriological samples and PCR tests for Chlamydia trachomatis and Neisseria gonorrhoeae are collected from the vagina and cervix.

Injury Types: Injuries were classified into Ecchymosis (bruise), Dermabrasion (abrasion), erythema (redness), edema (swelling), laceration, fracture and contusion. In French: Ecchymose, Dermabrasion, Erythème, Œdème, Déchirure, fracture, Plaie, Érosion, Contusion.

Bodily injury (non ano-genital injuries): Injuries found on the head/face (head, nose, eyes, ears, mouth), neck, torso (breasts, thorax, abdomen), back, buttocks, upper limbs, and lower limbs.

Ano-genital injuries: Injuries found on the vulva (outer labia, inner labia, posterior commissure, vestibular fossa), urethral opening (meatus), vagina, hymen, cervix, perineal raphe, anus and rectum.

Anal injury: Injuries found on the perianal region, anus and rectum.

Genital injury: Injuries found on the vulva (external labia, internal labia, posterior commissure, vestibular fossa), urethral opening (meatus), vagina, hymen, cervix and perineal raphe.

Number of penetrants: refers to the number (e.g. 0, single, multiple) and type of penetrants (e.g. penis, finger (digit), object).