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Review

Forensic medical examination after conflict-related sexual violence: A scoping review of the literature

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ABSTRACT

Conflict-related sexual violence (CRSV) is a form of gender-based violence and a violation of human rights. Forensic medical examination of victims of CRSV can be performed for the clinical and forensic management of patients or as part of the medical affidavit in judicial protection procedures. The aim of this scoping review was to summarize the knowledge on the forensic medical examination of survivors of CRSV by analyzing what types of violence were described by survivors, as well as the outcome of medical examination and evaluation of the degree of consistency, and of protection procedures. After the screening process, 17 articles published between January 1st, 2013, and April 3rd, 2023, on PubMed, Scopus, and Web of Science were eligible for inclusion. The findings of our review confirm that literature addressing forensic medical examination of victims of CRSV is scarce, as well as studies describing physicians' opinion on the consistency of the findings and protection outcomes. Trained and experienced professionals are needed in order to document human rights violations, including CRSV-specific lesions.

1. Introduction

Sexual violence (SV) is a specific type of gender-based violence[1] (GBV) and can be defined as any act, comment, or behavior of a sexual nature forcibly or coercively directed towards individuals or targeting their sexual organs.[3,4] SV constitutes not only a personal offense, but is equally a violation of human rights, including sexual and reproductive rights.[5]

The expression conflict-related sexual violence (CRSV) refers to episodes of SV directly or indirectly linked to a conflict.[3,6] In recent years notions of conflict-affectedness have expanded, detaching from punctual traumatic events situated in a specific time and space and shifting to the long-term impact of war, also encompassing the experiences of those survivors who move away as a result of hostilities and after sexual victimization.[7,8]

Forensic medical examination (FME) of victims of SV, including CRSV, can be performed by a variety of health professionals (physicians, obstetric nurses, and nurses)[9] as part of the clinical and forensic management of patients,[9] where evidence is documented and collected for possible future investigation in criminal proceedings.[9] Protocols exist at national levels to guide professionals conducting these procedures.[10,11] Prosecution rates are generally positively associated with FME in SV cases.[12] Assessment consists of the collection of patient anamnesis and history of the assault, physical examination (e.g., "top to toe" and genito-anal), and documentation of the injuries.[13]

FME is also conducted as part of the medical affidavit in judicial

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[1] GBV is an umbrella term for any harmful act perpetrated against a person's will and based on socially ascribed differences between individuals based on their gender, namely the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for individuals based on the sex they were assigned at birth.[1,2]

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protection procedures. International law establishes that States have the obligation to document and investigate torture allegations.[14] In the Istanbul Protocol (IP), SV is included among the various forms of torture.[15] The IP describes the different phases of the investigation: an interview with the victim where the history of violence is collected, physical and psychological assessment by medical personnel,[16] and their evaluation of the degree of consistency between the reported history and the exam findings (e.g., diagnostic of, highly consistent, consistent, typical of, not consistent).[15] Although theoretically the final objective of the IP is to end impunity for perpetrators, in practice FME of survivors of CRSV is rarely associated with determination of guilt. More often, these elements will serve the Commission of inquiry to assess the degree of credibility of the complainant and, when FME was performed in a host country, to consequently determine protection outcomes (e.g., refugee status).[16,17] Grant rates of different forms of protection are generally higher among applicants who receive FME.[18] In this light, FME after CRSV can constitute one of the fields of application of humanitarian forensic action,[19] together with mass-disasters victims' identification.[20,21]

Reviews on the documentation of torture and ill-treatment or on FME after sexual violence are rare and focus on protocols and operational methodologies rather than on data documented during medical assessment,[9,22,23] and, as far as we are aware, only one summarized knowledge on FME occurring after CRSV, without analyzing peer-reviewed original studies.[24]

Given that research on CRSV and on FME of torture is increasingly relevant due to the increase in the number of conflicts and consequent migration flows in recent years, including of victims of CRSV,[17,25,26] as well as due to the surge in CRSV cases, with 2455 documented cases in 2022,[27,28] a scoping review of the published scientific literature is needed to summarize the current knowledge at the intersection of CRSV and FME. The aim of this review is to document the current knowledge on the FME of survivors of CRSV, by focusing on the different phases of the forensic medical assessment. The research was guided by the question: "What is the current state of the scientific literature addressing the FME of victims of CRSV?". The present review aims to provide an answer to a series of sub questions, namely: "What types of violence were reported by survivors?", "What were the findings of the physical and psychological examination?", "What was the medical judgment on the evaluation of consistency?", and, if present, "What kind of protection outcome was described in the studies?".

2. Methods

2.1. Data sources, search strategy, and operational definitions

The Joanna Briggs Institute methodology for scoping reviews guided this review and the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews checklist was used to report each stage of the scoping review and findings.[29] The search was conducted on three databases (PubMed, Scopus, and Web of Science) to identify all relevant studies published between January 1st, 2013, and April 3rd, 2023. The databases were chosen because they index scientific literature exploring this issue from a clinical and forensic perspective. The search strings combined three blocks of terms, respectively related to SV, conflict, and FME (Additional file 1). Duplicates were removed, and titles and abstracts were manually screened. The full text of the remaining articles was read. Studies found not eligible were excluded.

In the present review, CRSV has to be intended as per the definition conceptualized by the Preventing Sexual Violence Initiative.[3] Conflict will be used to encompass the International Humanitarian Law definitions of international and non-international armed conflict,[30] as well as persecution,[31] genocide,[32] and gang violence.[33,34] The terms "survivor" and "victim" will be employed interchangeably to refer to people subjected to SV highlighting the process of recovery and calling attention to the criminal nature and the severity of acts of CRSV. "Migrant" will be employed as an umbrella term when no reference is made to specific legal definitions.[35]

2.2. Eligibility criteria

Original studies published in the last ten years (2013-2023) and exploring the collection and documentation of evidence of CRSV in adult populations during FME on the living person were eligible for inclusion. Studies dealing with minors were not included since FME of this population needs to be age- and development-specific.[36,37] Articles had either to mention conflict as per the operational definition or, in case the survivor migrated after CRSV, the country of origin of the majority of survivors had to be explicitly reported and affected by conflict at the time when data was collected. It was not necessary that the entire study population was affected by CRSV for the study to be eligible for inclusion.

The timeframe was chosen in order to focus on recently published studies, since the interest for forensic and medico-legal applications to the protection of human rights of people affected by conflict is quite recent[38] and due to evolutions in the definition of CRSV.[3,39]

Studies were excluded when not matching inclusion criteria (e.g., autopsy-based studies), or when they focused on training activities and did not collect data on the health of survivors; only clinical examination was performed; the study focused solely on intimate partner violence (IPV) or domestic violence, because the focus of this study was on CRSV whose perpetrators are not partners or members of the family of the victim; the study was also excluded when it focused on harmful practices (e.g., female genital mutilation/cutting); when the study dealt with SV while in the military; or addressed issues connected to FME of perpetrators. No exclusion criterion was applied to studies published in languages other than English.

2.3. Ethics

This study type is exempt from institutional board review.

2.4. Data extraction and analysis

A Google Sheet was developed to extract relevant information (Additional file 2). Data included general information about the article, study design, information about the survivors' experience and episodes of CRSV, and FME. Data was extracted and thematically analyzed,[40] according to the different phases of the medical assessment (e.g., documentation of history of violence, medical examination, evaluation of the degree of consistency).[13,15] Data about protection outcomes was also extracted.

3. Results

The search returned 2821 results. After removal of duplicates and title and abstract screening, 129 articles were eligible for full-text review. Of these, 17 articles met inclusion criteria. Data related to individuals over the age of 18 was extracted. Detailed information regarding the screening of sources and selection of evidence can be found in the PRISMA diagram (Fig. 1), while a comprehensive overview of the main characteristics of the studies is presented in Table 1. Details about medical evaluation of consistency and humanitarian protection outcomes can be found in Tables 2 and 3.

3.1. Characteristics of the studies

Data about the characteristics of the included studies was extracted and can be found in Tables 1 and 2.

Studies were always conducted in host countries, with 22 of them taking place in high income countries (HICs) and one conducted in a low- and middle-income country (LMIC).[46]

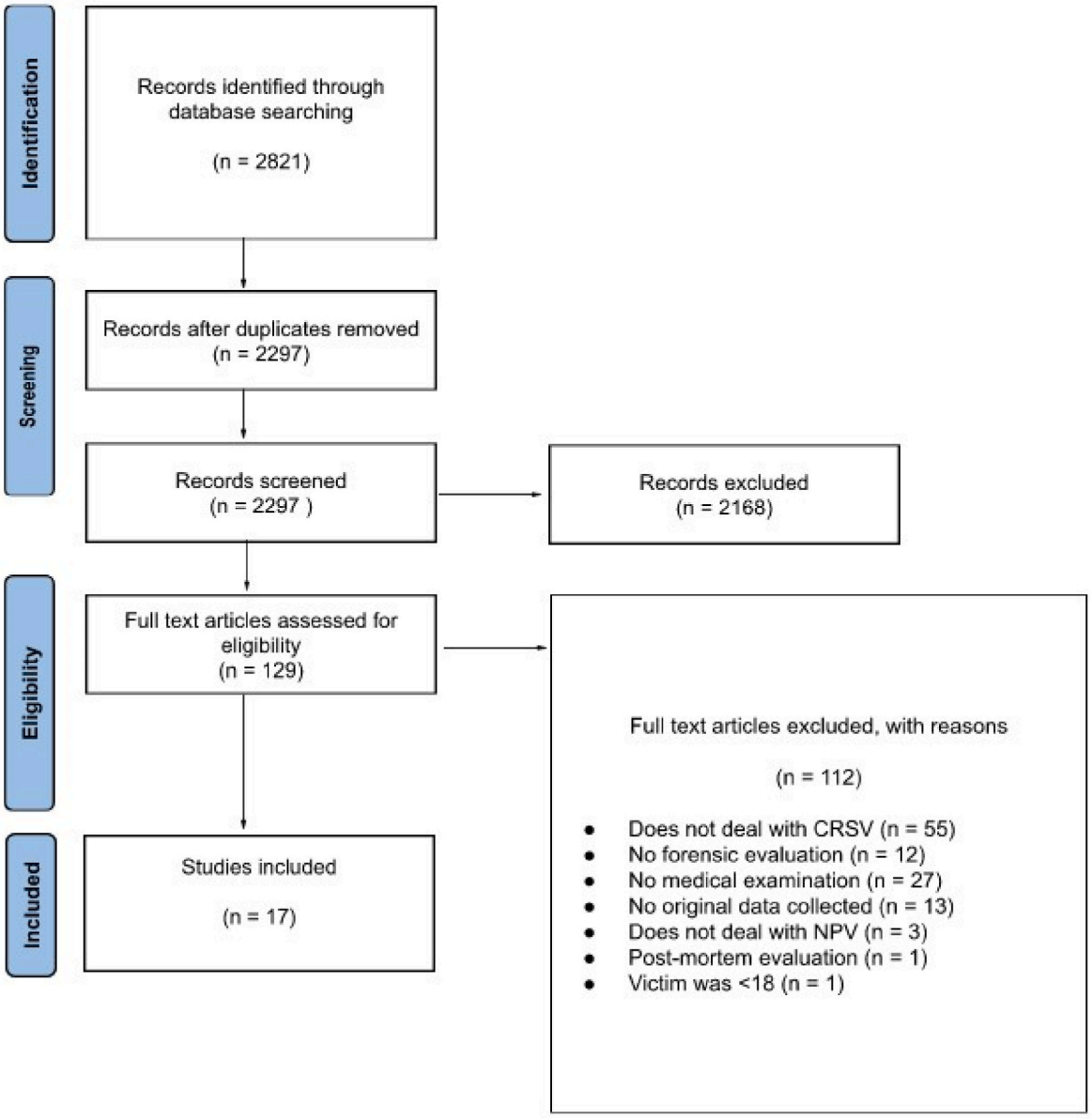

Fig. 1. Screening of the sources.

Migrant status of survivors was reported as refugee,[44,46,57] "migrants",[47] "asylum seeker",[41,43–45,47–49,51–56] "forced migrants who have received refugee status",[42] and "applicants seeking various forms of immigration relief".[50]

Reported perpetrators of violence were members of gangs,[43,47,50,52,55,56] or of organized criminal groups,[52] smugglers,[47,55] state sponsored actors,[46,52] militia group members,[51] soldiers,[47] police officers,[47] rebels,[47] customers,[47] civilians,[46] paramilitary,[43] state actors,[43] or were described by their ethnicity.[47]

When mentioned, violence took place in the home country,[41–48,50–52,54–57] in transit,[45–48,50,52,54,55] at the border,[43] and in the host country.[47,48,50,52,55]

3.2. History of violence

The kinds of CRSV disclosed by victims can be found in Table 4, together with non-sexual violence described as co-occurring during sexual assault. Data on other forms of violence described by survivors can be found in Table 5.

3.3. Forensic medical examination and evaluation

Information on the legal bases for asylum can be found in Table 2, while details about FME can be found in Table 3.

3.3.1. Findings of the FME

The time gap between the last episode of violence and FME was mentioned only in two of the studies[46,47] and varied from two days to almost one year. Details on the sequelae of CRSV found during FME can be found in Table 6, while information on the evidence of nonsexual violence can be found in Table 7.

3.3.2. Medical evaluation of consistency

Medical evaluation on the consistency of the findings with testimonies of survivors of CRSV according to the IP was reported only in two of the studies and with "opposite" judgments: physicians found them to be inconclusive[48] or conversely 100 % consistent.[54]

Aarts et al. connected higher levels of consistency with some variables such as being male, presenting a history of detention and violence

Table 1
Characteristics of the studies and findings (part 1).

Study reference and country where it was conducted/host country	Study period	Study type and methodology	Objective of the study	Population	% of the included population subjected to CRSV as reported in the included study
Gallagher (2022), United States of America (USA).[41]	April 2019–June 2021.	Quantitative. Retrospective review.	To describe the demographics, trauma experiences, mental health burden, and asylum application grant rates of the first 102 asylum seekers evaluated at University of California San Francisco Human Rights Collaborative (UCSF HRC) between 2019 and 2021.	102 asylum seekers.	61.6 %.
Kahn and Alessi (2017), Canada.[42]	December 2014–February 2016.	Qualitative. Semi structured interviews.	To examine the psychological sequelae that may emerge for LGBT forced migrants who participate in the refugee claims process.	22 service providers (legal providers, mental health professionals, advocates, settlement workers, private sponsors). 7 forced migrants.	All providers described clients with past incidents of sexual violence.
Silverstein (2021), USA.[43]	Not mentioned.	Qualitative. Retrospective analysis.	Understanding the physical and mental health effects of Migration Protection Protocols, as well as the social determinants of health that impact asylum seekers forced to remain in Mexico.	11 asylum seekers subjected to Migration Protection Protocols (MPP).	Not mentioned.
Bird (2021), USA.[44]	January 2013–March 2019.	Quantitative. Descriptive analysis.	To assess differences in sociodemographic characteristics, persecution experiences, and mental health outcomes among 959 RAS persecuted for same-sex behavior who presented for care and social services at the Boston Center for Refugee Health and Human Rights.	959 refugees and asylum seekers (RAS) persecuted for same-sex behavior.	0.65 %.
Siman Tov (2019), Israel.[45]	2009–2012.	Quantitative. Retrospective analysis.	To identify the scope and types of medical services utilized by asylum-seekers and the relationship between delayed medical care to the development of PTSD.	861 asylum seekers. Only those among them who were subjected to torture were included in the study population.	6.5 %.
Haar (2019), Bangladesh.[46]	December 2017, February 2018, March 2018, and July 2018.	Qualitative. Semi structured interviews.	(1) To describe and document the nature of injuries and other physical sequelae and (2) assess whether or not physical findings corroborated the narratives of survivors; and (3) identify any patterns in the testimony and medical evidence to assess allegations of a systematic, widespread, and premeditated campaign of violence against the Rohingya.	114 Rohingya survivors.	3 “raped”. 2 other types of SV. (4.38 %)
Castagna (2018), Italy.[47]	Jan 1, 2007–Dec 31, 2016.	Quantitative. Retrospective analysis.	To evaluate clinical and forensic features of the health of African female migrant victims of violence in Turin (Italy).	136 African immigrant women examined at the Sexual violence relief center at Sant’Anna Hospital in Turin, Italy.	92.6 %.
Bianchi (2021), Italy.[48]	2014–2018.	Quantitative. Retrospective analysis.	To analyze a sample of forensic reports issued by the dedicated service of the ASL Firenze and required by the local Committee of asylum seekers.	196 medico-legal reports of asylum seekers who claimed to be victims of torture in their home countries or during the migration journey.	Not mentioned.
Magli (2019), Italy.[49]	Not mentioned.	Quantitative. Descriptive analysis.	To describe the Italian experience in the Metropolitan city of Milan connected to the medico legal evaluation of asylum seekers who have suffered from physical violence, including torture, as well as the variables involved.	225 asylum seekers.	1 %.
Atkinson (2021), USA.[50]	January 2008–December 2018.	Quantitative. Retrospective analysis.	1) To determine the utility of medical evaluations and their impact on adjudication outcomes of asylum claims and other forms of immigration relief and 2) to determine which individual demographic and case characteristics were correlated with successful outcomes among applicants with forensic medical evaluations.	2584 cases (1st objective), with data collected from attorneys (including medico-legal evaluation), 481 cases (2nd objective), with data collected from medical affidavits.	58.7 %.
Nguyen (2019), USA.[51]	Not mentioned.	Qualitative. Case report.	To explore the experiences of LGBTQ asylum seekers throughout the asylum process, from Nigeria to a detention center in the USA.	1 cisgender gay male asylum seeker.	100 %.
Miller (2021), USA.[52]	January 2015–January 2018.	Quantitative. Retrospective chart review.	To (1) document the forms of psychological and physical abuse experienced by asylum seekers receiving medical-legal evaluations, (2) identify the psychological consequences of the abuse, and (3) determine the frequency with	121 asylum seekers who received pro bono forensic medical-legal evaluations by a human rights program.	58 %. Women 71 %. Men 10 %.

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Table 1 (*continued*)

Study reference and country where it was conducted/host country	Study period	Study type and methodology	Objective of the study	Population	% of the included population subjected to CRSV as reported in the included study
			which clinician-evaluators found corroborating evidence.		
Breads and Anderson (2020), USA.[53]	May 2017–December 2018 (documentation) March 2019–April 2019 (interviews).	Mixed methods. Review of administrative records. Semi structured interviews.	To examine both the feasibility and acceptance of a nurse-led service delivery model for offering forensic physical evaluations to foreign-born community members seeking immigration reliefs.	8 patients. 5 service providers.	100 %.
Busch (2015), Denmark.[54]	January 1, 2001–May 31, 2013.	Quantitative. Review of medical records.	To investigate different alleged forms of torture and to categorize their prevalence according to geographical regions.	154 reports. One was excluded because it did not contain any geographical data.	28 %. (Asia 23 %, Europe 27 %, Middle East 31 %, Sub-Saharan Africa 31 %) 78 % of the females (66 % "rape"). 25 % of the males (8 % "rape").
Baranowski (2019), USA.[55]	2014–2018.	Qualitative. Retrospective chart review.	To identify how the experiences of women asylum seekers may be understood through the lens of GBV and the criteria for international protection, as well as to inform practice guidelines for clinicians and to increase our understanding of how GBV may affect testimony in the context of application for asylum.	70 cases.	84 %.
Hanna (2021), USA.[56]	2016–2020.	Quantitative. Retrospective analysis.	To assess trends seen among asylum seekers evaluated by a student-led collaborative in the Capital Region in order to guide the authors' efforts to better serve and care for our clients.	23 affidavits.	More than 55 %, of which "rape" almost 45 %.
Aarts (2019), Netherlands.[57]	2012–June 2013.	Quantitative. Review of medico-legal reports.	To investigate the variables associated with experts' judgments on the consistency between the asylum seeker's psychological and physical state and their story and to compare the expert judgments on consistency with the subsequent judicial outcome.	97 reports.	62.9 %.

provoking physical symptoms detectable during examination.[57] Psychological symptoms' consistency was connected with being a female in receipt of mental health care and presenting a history of sexual violence.[57]

3.4. Protection outcome

In data reported by Aarts et al. (Netherlands) a positive outcome (e.g., refugee status) was presumed to be influenced by the presence of physical symptoms and by consistency with the history of violence.[57] Conversely, documentation of psychological symptoms that were consistent with the history of violence did not lead to a positive decision.[57] Authors suggest that this could be correlated with adjudicators considering physical symptoms consistency more objective compared to that of psychological symptoms.[57]

In Atkinson et al. (United States of America (USA)) physical evaluation was associated with a positive outcome while psychological evaluation was marginally associated with a positive outcome. "Africans" had more likelihood to receive a positive outcome compared to "South Americans", however authors suggest that this may highlight the necessity that the members of the former population have to corroborate the consistency of their history of violence.[50] In the same study, 80.3 % of those who were subjected to SGBV received a positive outcome. Young age and LGB identity were also associated with a favorable decision.[50] Conversely, being detained in the US and fleeing gang violence were associated with negative outcomes.[50]

4. Discussion

The limited number of articles matching our inclusion criteria shows how research on FME of victims of CRSV is scarce despite the large number of people fleeing from conflict and affected by this crime.[58,59] This is coherent with the little attention attributed in research to the investigation and documentation of torture.[17] The number of studies describing physician's opinion on the consistency of the findings and protection outcomes is even lower. The majority of the studies highlighted physical (e.g., non-sexual) or psychological sequelae of episodes of violence reported by survivors, and limited attention was directed towards CRSV-specific lesions. Moreover, in some of the articles, figures reporting the prevalence of sexual torture were underestimated compared to those usually presented in the literature, with SV affecting 63–80 % of female and 25–56 % of male survivors.[54,60]

The entirety of the studies was conducted in the host country of migrants, showing a gap in the literature concerning FME in conflict-affected countries. This could be connected to prioritization attributed in guidelines to clinical management over the collection and documentation of forensic evidence (e.g., in the Minimum Initial Service Package for Sexual and Reproductive Health in Crisis Situations).[61] Moreover, the presumed time gap occurring in the majority of cases between the last episode of violence and FME resulted in no reference to the collection of biological traces (e.g., with the maximum recommended time occurring between SV and collection of specific biological traces being 168 h).[22,62,63] The majority of the studies were conducted in the USA[41,43,44,50–53,55,56] and in Italy,[47–49] two of the highest recipient nations of migrants globally and in the Mediterranean[17,64] and only one

Table 2
Characteristics of the studies and findings (part 2).

Reference	Sex or gender of survivors of violence as reported in the studies	Country or area of origin	Legal basis for asylum	Degree of consistency according to IP standardization[a]	Humanitarian protection outcome
Gallagher (2022).[41]	F 62.7 % M 35.3 % T 2 %	Guatemala, El Salvador, Honduras, Mexico, Eritrea, and other unmentioned countries.	Affiliation with a particular social group (52.5 %), gang violence (51.5 %), domestic violence (45.5 %), political persecution (34.3 %), sexual violence (28.3 %), gender-based violence (18.2 %), and religious persecution (13.1 %).	Not consistent 0 % Consistent with 26.7 % Highly consistent with 62.2 % Typical of 8.9 % Diagnostic of 2.2 %	Of the 23 HRC clients who already received a legal status determination, 100 % were granted asylum or other forms of legal protection.
Kahn and Alessi (2017).[42]	/	Bahamas, Bangladesh, Iran, Lebanon, the Arab peninsula, Ghana.	SOGI (Sexual Orientation and Gender Identity).	Not mentioned.	All the included participants had already received a positive outcome.
Silverstein (2021).[43]	/	Central America, presumably Mexico.	In accordance with MPP asylum seekers presenting to the USA southern border have to wait in Mexico.	Not mentioned.	Not mentioned.
Bird (2021).[44]	M 48.4 % F 51.6 %	Uganda, other unmentioned countries.	Persecution due to same sex behavior (11.1 %), due to gender, race, ethnicity, political or religious affiliation, being friend or family member of a person who advocates for the aforementioned.	Not mentioned.	Some of the participants were already refugees, asylees, or green card holders at the time of the study.
Siman Tov (2019).[45]	M 63.2 % F 36.8 %	Eritrea, Sudan, other unmentioned countries.	Not mentioned.	Not mentioned.	Not mentioned.
Haar (2019).[46]	M 68 % F 32 %	Myanmar.	Not mentioned.	In all cases, except for one high level of consistency between the physical examination of the injuries and the description of how they were sustained and the weapons employed.	Not mentioned.
Castagna (2018).[47]	F 100 %.	Nigeria (64), Democratic Republic of the Congo (DRC) (24), Ivory Coast (23), Cameroon (13), Somalia (4), Guinea (2), Ethiopia (2), Gambia (1), Eritrea (1), Gabon (1), Mali (1).	Not mentioned.	Not mentioned.	Not mentioned.
Bianchi (2021).[48]	M 194. F 2.	Nigeria (50), Guinea Conarky (22), Gambia (22), Senegal (19), Mali (18), Ivory Coast (17), Ghana (6), Guinea-Bissau (2), Liberia (2), Burkina Faso (1), Sierra Leone (1), Somalia (3), Eritrea (2), Pakistan (15), Bangladesh (9), Afghanistan (2), Europe (3), Middle East (2).	Torture in the country of origin.	Only 60.7 % of cases are judged compatible or incompatible, while 39.2 % of reports are inconclusive. The whole injury pattern was declared consistent with the claimed torture act in 114 (58.1 %) of the 196 examined cases, and in 5 cases (2.5 %), exclusion. In 77 cases (39.2 %), the reports expressed an inconclusive judgment. CRSV findings' consistency was judged inconsistent.	Not mentioned.
Magli (2019).[49]	M 87 %	Nigeria (35), Ivory Coast (28), Somalia (24), Gambia and Mali (12 each), Senegal (10), Togo (6), and Algeria (5), Pakistan (20), Afghanistan (9), and Iran (3).	Torture, inhuman or degrading treatment.	1.8 % was not consistent,49 % was consistent, 42.1 % was highly consistent, 5.3 % was typical, and 1.8 % was diagnostic.	When not consistent: 100 % humanitarian protection. When consistent: 56.5 % asylum, 26 % humanitarian protection, 14 % subsidiary protection, and 17.8 % denial-of-asylum. When highly consistent: 50 % asylum, 8.3 % humanitarian protection, 33.3 % subsidiary protection, and 8.3 % denial of asylum. When typical: 66.7 % asylum and 33.3 % denial-of-asylum. When diagnostic: 100 % asylum.
Atkinson (2021).[50]	M 51.7 % F 48.3 % T n = 1.	2nd objective Africa and South America.	Most common asylum reasons were SGBV (58.7 %), gang violence (21.8 %), foreign detention (17.7 %) and LGB (14.4 %).	Not mentioned.	From 2008 to 2018, 81.6 % (n = 2109) of case outcomes were positive, with asylum being granted in the majority of cases, 12.1 % (n = 313) were negative

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Table 2 (*continued*)

Reference	Sex or gender of survivors of violence as reported in the studies	Country or area of origin	Legal basis for asylum	Degree of consistency according to IP standardization[a]	Humanitarian protection outcome
			Most common protected grounds were membership in a particular social group (78.2 %) and political opinion (43.2 %). Torture was indicated in 43.1 % of cases, and 7.7 % of applicants were detained by the U.S.		and 6.3 % (n = 162) were adjudicated as 'other' outcomes.
Nguyen (2019).[51]	M 100 %	Nigeria.	Membership in a particular social group (LGBTQ+).	Consistent.	Not mentioned.
Miller (2021).[52]	F 75.21 % M 24.79 %	Northern Triangle (e.g., Guatemala, Honduras, El Salvador) (47.93 %), Africa (32.23 %), Asia (13.22 %), Latin America (4.13 %), Europe (1.65 %), Caribbean (0.83 %).	Membership in a particular social group (n = 100, 83 %) was the most common protected ground upon which clients sought asylum, followed by political opinion (n = 58, 48 %), religion (n = 15, 12 %), race (n = 8, 7 %), and nationality (n = 4, 3 %).	Consistent in 97 % of cases.	Not mentioned.
Breads and Anderson, (2020).[53]	F 100 %	El Salvador, Honduras, Guatemala, Bangladesh, Rwanda.	Member of a particular social group, political, race, religion, nationality.	Not mentioned.	Not mentioned.
Busch, (2015).[54]	M 146 F 8	Syria (20), Iran (18), Iraq (14), Lebanon (7), Lybia (7), Turkey (4), Algeria, Egypt, Palestinian territory (occupied) (1 each), India (25), Sri Lanka (8), Afghanistan (8), Pakistan (6), China (4), Bangladesh and Vietnam (1 each), Azerbaijan (5), Russia (3), Kosovo (2), Armenia, Belarus, Bosnia, Croatia, Chechnya (1 each), DRC (4), Sudan (4), Cameroon (2), Burundi, Nigeria, Uganda (1 each).	Torture in country of origin.	100 % consistent, including CRSV.	Not mentioned.
Baranowski, (2019).[55]	F 100 %	Honduras (44 %), El Salvador (34 %), Guatemala (21 %). 14 % identified as members of indigenous communities.	Not mentioned.	Not mentioned.	Not mentioned.
Hanna, (2021).[56]	F 87 % M 13 %	Most were from Honduras, Mexico, Guatemala, Haiti, Dominican Republic, and Jamaica, unspecified countries throughout Africa, Europe, South America, and Asia.	A majority (65.2 %) of the clients were seeking asylum due to fear of threats or abuse in their home country. Other reasons included work (13 %), marriage (8.7 %), natural disaster (4.3 %) and forced work (4.3 %).	Not mentioned.	90 % of the clients had a positive outcome.
Aarts, (2019).[57]	M 72.2 % F 27.8 %	25 different countries, only some were specified. Iran (16), Uganda (11), Sri Lanka (10), Guinea (8), Afghanistan (8).	Not mentioned.	Psychological: No symptoms or not able to judge consistency 4.1 %, not consistent 0, consistent 1 %, highly consistent 26.8 %, typical: 67 %, diagnostic 1 % Physical: Not able to judge 27.8 %, not consistent 0, consistent 6.2 %, highly consistent 27.8 %, typical 32 %, diagnostic 6.2 %.	69.1 % were granted asylum, 22.7 % request was denied, 8.2 % still unknown at the time of the study.

[a] This refers to the degree of consistency between the history of abuse reported by the survivor during FME and the sequelae documented during FME. According to IP standardization, the classification of degree of consistency in FME goes as follows: "Diagnostic of" when the injury could not have been caused in any other way other that described, "Typical" or "Highly consistent" when there are few other possible causes of the injury apart from the trauma described, "Consistent" when the injury is nonspecific and there are many other possible causes, "Not consistent" when the injury could not have been caused by the trauma described.[15]

of the articles reported data collected in a LMIC host country (e.g., Bangladesh).[46]

Symptoms' consistency according to IP standardizations or variations of it and referring to CRSV sequelae was mentioned directly only in two of the studies,[48,54] while one of the articles correlated presence of symptoms of CRSV sequelae with psychological symptoms' consistency, when associated with being female and receiving mental health treatment.[57] However, findings reported by Bianchi et al. did not find any positive correlation between the history of SV and FME findings, which were judged as "inconsistent".[48]

In the majority of the articles CRSV was very broadly described as "sexual violence".[42,43,49,50,53–55,57] Various subcategories of rape or assault by penetration were also presented in a relevant number of articles.[41,43,44,46–48,51,54–56] The most reported lesions related to physical violence (e.g., non-sexual) were blunt[41,43,44,47–49,51,52,54–56] and penetrating[41,44,45,48,49,52,54,55] force injuries. Capturing all evidence of

Table 3
Details of forensic medical evaluation.

Reference	Facility name and location	Professionals who conducted the evaluation	Evaluation type	Reason for collection of evidence
Gallagher (2022).[41]	UCSF HRC. Student-run organization.	Clinicians performing FMEs were trained, licensed health care professionals, including physicians, psychologists, and social workers.	Physical and psychological 57.8 %, only psychological 36.3 %, only physical 5.9 %.	Asylum application.
Kahn and Alessi (2017).[42]	Not mentioned.	Trained mental health professionals.	Psychological.	Asylum application.
Silverstein (2021).[43]	University of Southern California's Keck Human Rights Clinic in Los Angeles.	Trained clinicians.	/	Asylum application.
Bird (2021).[44]	Boston Center for Refugee Health and Human Rights.	Trained clinicians	Interview. Psychological.	Asylum application.
Siman Tov (2019).[45]	Open Clinic of Physicians of Human Rights in Tel Aviv.	Trained clinicians.	Interview. Physical examination.	Following the request of UNHCR to document traumatic events asylum seekers were exposed to while fleeing to places of refuge.
Haar (2019).[46]	Not mentioned.	Trained physicians.	Physical examination.	Support allegations of a systematic, widespread, and premeditated campaign of forced displacement and violence against Rohingyas in Myanmar.
Castagna (2018).[47]	Soccorso Violenza Sessuale (Sexual violence relief center) Sant'Anna Hospital, Turin (Italy).	Trained gynecologists, midwives, psychologists, social workers, and medical examiners.	Physical examination (133). Genital examination (124).	Clinical and forensic management of victims of SV.
Bianchi (2021).[48]	Dedicated forensic service for the reporting and verification of torture or physical abuse cases claimed by asylum seekers at ASL (Local Health Unit) Toscana Centro in Florence.	Trained forensic physicians.	Anamnestic interview, external examination, possible further examination/ investigation.	Reporting and verifying of torture and physical abuse cases claimed by asylum seekers.
Magli (2019).[49]	University Institute of Legal Medicine, Milan.	Trained forensic specialists. A team composed of experts in clinical forensic medicine, ethno-psychiatry, anthropology, psychology and social work—are responsible for examining asylum seekers and assisting with their applications for asylum.	Full physical medical examination during clinical assessment.	Humanitarian protection.
Atkinson (2021).[50]	Physicians for Human Rights clinic, City University of New York School of Law, City University of New York School of Medicine, City University of New York School of Public Health.	Trained forensic physicians.	Physical, psychological, and/or gynecologic (only for 481 cases).	Immigration reliefs.
Nguyen (2019).[51]	Yale Center for Asylum Medicine.	/	Physical and psychological evaluation at a detention center.	Asylum application on the basis of persecution based on "membership in a particular social group".
Miller (2021).[52]	Not mentioned.	Licensed clinicians with specialized training in the Istanbul Protocol guidelines for the documentation of torture and its sequelae.	Medical, psychological and/or gynecological.	Referral for medico-legal evaluation by pro bono attorneys; humanitarian protection.
Breads and Anderson, (2020).[53]	Mercy Medical Center Emergency Department in Baltimore, MD.	Trained forensic nurses.	Physical.	Immigration reliefs.
Busch, (2015).[54]	Department of Forensic Medicine at the University of Copenhagen.	/	Physical.	To detect patterns of torture and their sequelae; humanitarian protection.
Baranowski, (2019).[55]	Not mentioned.	Licensed and trained clinicians.	Physical, psychological.	Asylum application.
Hanna, (2021).[56]	The Capital District Asylum Collaborative, student-run clinic.	Personnel working at a student-run clinic.	Psychiatric, medical.	Asylum application.
Aarts, (2019).[57]	Netherlands Institute for Human Rights and Medical Assessment.	Trained clinicians (psychologists and medical doctors).	Physical, psychological evaluation.	Asylum application.

torture sequelae is influenced by the degree of training as well as by the level of experience of the professionals conducting FME.[17,25] Among the included articles, the one conducted by Castagna et al. reports more in detail the evidence of CRSV as described by survivors and as highlighted by FME.[47] As an example, pregnancy and STI positivity provoked by CRSV, as well as a detailed description of gynecological injuries, could be detected despite the long time span (e.g., 50 % of victims were examined between 16 and 180 days; 35.29 % after 180 days) occurring between the last episode of violence and FME due to the training and expertise of the multidisciplinary team working at the facility, a Sexual Violence Relief Center in a Obstetrics and Gynecology Clinic.[47] This suggests that when FME of CRSV survivors is conducted by trained professionals who have experience in detecting specific injuries and patterns of ill health, the sequelae of symptoms have less chances of being overlooked, and FME could possibly contribute towards documenting evidence of human rights violations, including in the domain of sexual and reproductive health and rights. This could serve also in highlighting the negative health effects of violence and to frame it as a public health issue.[4]

The quality of documented evidence and the coherence between victim's statement and medical report seems to be generally positively associated with a positive judgment of the Committee (e.g., recognition of refugee status or other forms of humanitarian protection).[25] However, the assumed subjectivity of the physician conducting FME could negatively affect protection outcomes, in particular when the client presented psychological symptoms.[17,50,57] This is coherent with the higher impact that physical signs and symptoms of trauma have on legal professionals.[64]

Table 4
Summary of the findings connected to CRSV disclosed by survivors.

Kind of CRSV (as per the operational definition)	*n* of articles mentioning it[a] (n = 17)
General (sexual violence/assault/abuse)	15
Rape or assault by penetration (vaginal, anal, oral; penile, with objects; including witnessed)	10
Verbal abuse, threats	5
Victim forced to perform sexual acts (on oneself or on others)	2
Reproductive violence (forced sterilization and forced abortion)	2
Violence directed at genitals or other erogenous sites	2
Forced nudity	2
Unwanted sexual touching	1
Stalking and harassment	1
Co-occurring non-sexual violence	***n*** **of articles mentioning it[a] (n = 3)**
Blunt force trauma (e.g., natural and blunt force weapons)	2
Witnessed death or murder, being left for dead after CRSV	2
Restriction (e.g., by use of physical force, through coercion, with the use of substances)	1
Detention	1

[a] Does not equal the sum of the number of articles in which each sub-category was mentioned.

Table 5
Other types of torture or ill-treatment described by survivors.

Kind of non-sexual violence	*n* of articles mentioning it[3] (n = 17)
Mechanical agents (blunt force[1], penetrating force, sharp force, directed at teeth or nails, asphyxiation, hair traction, positional torture or suspension)	13
Psychological violence (deprivation of resources, threats, violent interrogation, poor conditions of detention, forced witnessing of torture or killing, verbal violence, forced separation)	13
General physical violence	12
General torture	9
Injuries caused by physical agents (burns, electrocution[2], thermic agents, branding)	8
Restriction of freedom of movement	8
Kidnapping/trafficking/slavery	7
Injuries caused by chemical agents (poisoning, pharmacological torture, lesions due to chemical exposure)	3
Gang violence	2
Violence adult survivors reported during childhood	1
Kind of GBV separated from our operational definition	***n*** **of articles mentioning it[3] (n = 6)**
Domestic violence	6
IPV	4
GBV during childhood (FGM, child labor, school related)	4
Based on sexual orientation or gender identity	3

[1, 2] Region of the body unspecified.

5. Strengths and limitations

To the best of our knowledge, this is the first scoping review focusing on FME of victims of CRSV. Moreover, our review is grounded in the most recent evolutions of the concepts of conflict-affectedness and CRSV.

However, this review has some limitations. Due to eligibility criteria, gray literature wasn't explored.

In most of the studies data was not sex- or gender- disaggregated and this prevented us from describing the findings in a more precise way, as well as from understanding gender-specific variations in the experience of survivors of CRSV. Victimization targeting transgender populations was captured to a limited extent for what concerns other kinds of violence but could not be properly described for CRSV.

We strived to separate instances of CRSV from other abuses in our analysis. However, in some of the included studies data was not exclusively focused on survivors of CRSV but included other forms of violence, at times presented in aggregated form. Even though the search string aimed to be inclusive of a variety of forensic applications (e.g., encompassing both legal medicine and forensic sciences), no studies reporting findings related to humanitarian forensic science applications were eligible for inclusion. This might show a gap in the literature or more specific search strings or databases might be needed to capture studies in the field of forensic science (e.g., collection of biological samples). Another limitation of the present review is that due to lack of access to the original documentation, it was not possible to first-hand understand the correlation between the history of violence, the findings of FME, and the evaluation of degree of consistency. Moreover, in most cases the rationale behind the decision of the committee regarding protection outcomes could not be accessed or was not reported by authors of the included studies. This prevented us from analyzing data in a

Table 6
Sequelae of CRSV found during FME.

Reference	Evidence
Baranowski	Physical: "gynecological injuries", bleeding, abdominal pain.
Bianchi	Physical: scars provoked by lacerations on the internal thigh.
Castagna	Physical: "genital injuries", "lacerations or tears", "loss of substance", scars on the genital area, urinary disorders, abdominal pain, pregnancy, STI positivity (herpes simplex virus, *Chlamydia trachomatis*, human papillomavirus, *Candida Albicans*, hepatitis C/B virus, *Treponema pallidum*, and bacterial vaginosis). Connected to nonsexual violence co-occurring during sexual assault: abrasions, bruises, burns, "limb mutilations". Psychological: sadness, fear and terror, powerlessness, insomnia or nightmares, re-experiencing, headaches or migraines, chest pain, asthenia, nausea, suffocation.
Haar	"Injuries from sexual violence".
Kahn	Psychological: depression, anxiety, suicidality; in lesbian, gay, and bisexual claimants dissociation.

Table 7
Evidence of nonsexual violence.

Reference	Nonsexual violence sequelae (physical and psychological)
Gallagher (41)	Generic unspecified injuries. Evidence of psychological violence or trauma. Depression, one or more symptoms of post-traumatic stress disorder (PTSD).
Bianchi (48)	Injuries provoked by blunt, pointed, sharp instruments, painful limitation or functional impairment, defensive injuries on the upper limb, scars (from blunt force, sharp trauma, and physical agents), signs of fractures, osseous deformities, loss of teeth and use of prosthetics, evidence of teeth avulsion, nail extirpation, amputation, burns from physical agents.
Haar (46)	Scarring, disability, chronic pain, blunt force injuries, signs of fractures, blast injuries, hearing and vision loss and neurovascular injuries provoked by explosions, penetrating force injuries, sharp trauma, burns. Depression, one or more symptoms of PTSD, anxiety, distress, strained relationships.
Magli (49)	Defensive injuries on trunk, hands, and forearms. Blunt force injuries, scars, blast injuries, penetrating force injuries, injuries connected to the use of chemical agents.
Miller (52)	Blunt force injuries, blunt trauma to the head, loss of consciousness, concussion, penetrating injuries. Depression, one or more symptoms of PTSD, anxiety, distress, suicidal ideation, suicidal attempts.
Baranowski (55)	Bruises, broken teeth, blunt trauma to the head, loss of consciousness, post-concussion syndrome, blunt force injuries to abdomen, penetrating force injuries, lacerations or punctured wounds, burns. Depression, one or more symptoms of PTSD, anxiety, trauma, stress, suicidal ideation, fear for family members.
Hanna (56)	Major depressive disorder, anxiety, cognitive disorders.

more exhaustive way.

6. Recommendations

From a research perspective, data reported in studies focused on FME should be inclusively gender disaggregated.[65] More studies focusing exclusively on violence endured by victims of CRSV should be conducted. Considering that more than 76 % of refugees worldwide are hosted in LMICs,[66] capacity building and awareness raising on the importance of FME are needed in this setting. More research should be conducted in LMIC host countries and in conflict-affected settings. Furthermore, more studies should describe the collection of biological specimens and their analysis in cases of CRSV, since agreement with lab results can be useful to confirm victims' testimonies during criminal proceedings.[22,67]

From a policy perspective, we recognize that the IP is crucial in guiding physicians in charge of investigating and documenting human rights' violations.[25] However, improvements are still needed.[25] Most importantly, the IP considers SV as one type of physical torture, however, this risks putting the limited medical evidence left by this kind of violence after a long time span occurring between the event and FME unnoticed compared to other kinds of physical violence. Individuals in need of protection should receive FME from a trained multidisciplinary team[16] with expertise in the management of victims of SV.

A study recently conducted by Franceschetti et al. highlighted that knowledge of the IP is not enough for physicians to perform their evaluation in a standardized and objective manner.[17] Conversely, training and expertise in the detection and documentation of different kinds of lesions have the highest degree of influence in establishing the degree of consistency with victims' statements.[17] This is due to the fact that evaluation could be affected by two complementary and subjective elements: the operator and patient-related factors provoking heterogenic pathognomic manifestations of anthropogenic lesions.[17] Most importantly, the lack of research on FME of migrants concurs together with lack of specific training in causing practitioners to be left without any methodological framework on how to conduct examination and evaluation of injuries.[25] This also extends to documentation of lesions, possibly negatively affecting the judgment from the Committee.[25]

As the findings of the included studies may suggest, from an operational perspective, trained professionals should be able to detect torture-specific lesions that were not mentioned in survivors' history of violence, as this could contribute to document human rights violations. This is especially relevant in cases where the victim cannot recall the events in a full and coherent manner.[67] In addition to this, clinical and forensic management of victims of SV should ideally be conducted concurrently[67] in order to plan therapeutic needs and collect as much evidence as possible.[16]

Moreover, as suggested by Franceschetti et al., introducing health professionals with expertise in migration and violations of human rights within adjudicating committees could foster better understanding of the health effects and lead to fairer judgements.[68]

As a final note, it is now the time to raise awareness among professionals working in the medico-legal field on the role they can play in the protection of human rights of victims of CRSV and in paving the way towards the attainment of their highest standards of health.[69] In host countries humanitarian applications of legal medicine should extend also to defending the right to access healthcare of migrants with different legal statuses and facing structurally and socially rooted pre-existing vulnerabilities leading to heightened impacts during disasters.[70]

7. Conclusion

Scientific literature focusing on FME of CRSV survivors is scarce and limited attention is given to CRSV-specific lesions compared to other physical and psychological sequelae. Specialized training and expertise are needed for professionals working in this field. Conducting high quality research focusing on FME of torture, including CRSV, could serve to document operational methodologies and as a guideline to professionals conducting FME. FME of victims of CRSV should be conducted by a multidisciplinary team of experts in the clinical and forensic management of the aftermath of this kind of violence and human rights violation.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

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CRediT authorship contribution statement

Elena Rubini: retrieved and analysed data, wrote the original draft as well as the final document. **Martina Valente:** conceived the original idea, provided methodological support to the study. **Giulia Sguazzi:** contributed to writing the article and critically reviewed the paper. **Monica Trentin:** contributed to writing the article and critically reviewed the paper. **Luca Ragazzoni:** provided senior supervision. **Sarah Gino:** conceived the original idea, provided methodological support to the study, and provided senior supervision. All authors read and approved the final manuscript.

Declaration of competing interest

The authors declare that they have no competing interests.

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Acronyms

CRSV	conflict-related sexual violence
DRC	Democratic Republic of the Congo
F	female
FME	forensic medical examination
GBV	gender-based violence
HIC	high income country
IP	Istanbul Protocol
IPV	intimate partner violence
LGB	lesbian, gay, bisexual
LGBT	lesbian, gay, bisexual, transgender
LGBTQ+	lesbian, gay, bisexual, transgender and queer
LMIC	low and middle income country
M	male
MD	Maryland
MPP	Migration Protection Protocols

PTSD	post-traumatic stress disorder
RAS	refugees and asylum seekers
SOGI	Sexual Orientation and Gender Identity
STI	sexually transmitted infection
SV	sexual violence
T	transgender
USA	United States of America
UCSF HRC	University of California San Francisco Human Rights Collaborative;
UNHCR	United Nations High Commissioner for Refugees

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jflm.2024.102736.

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