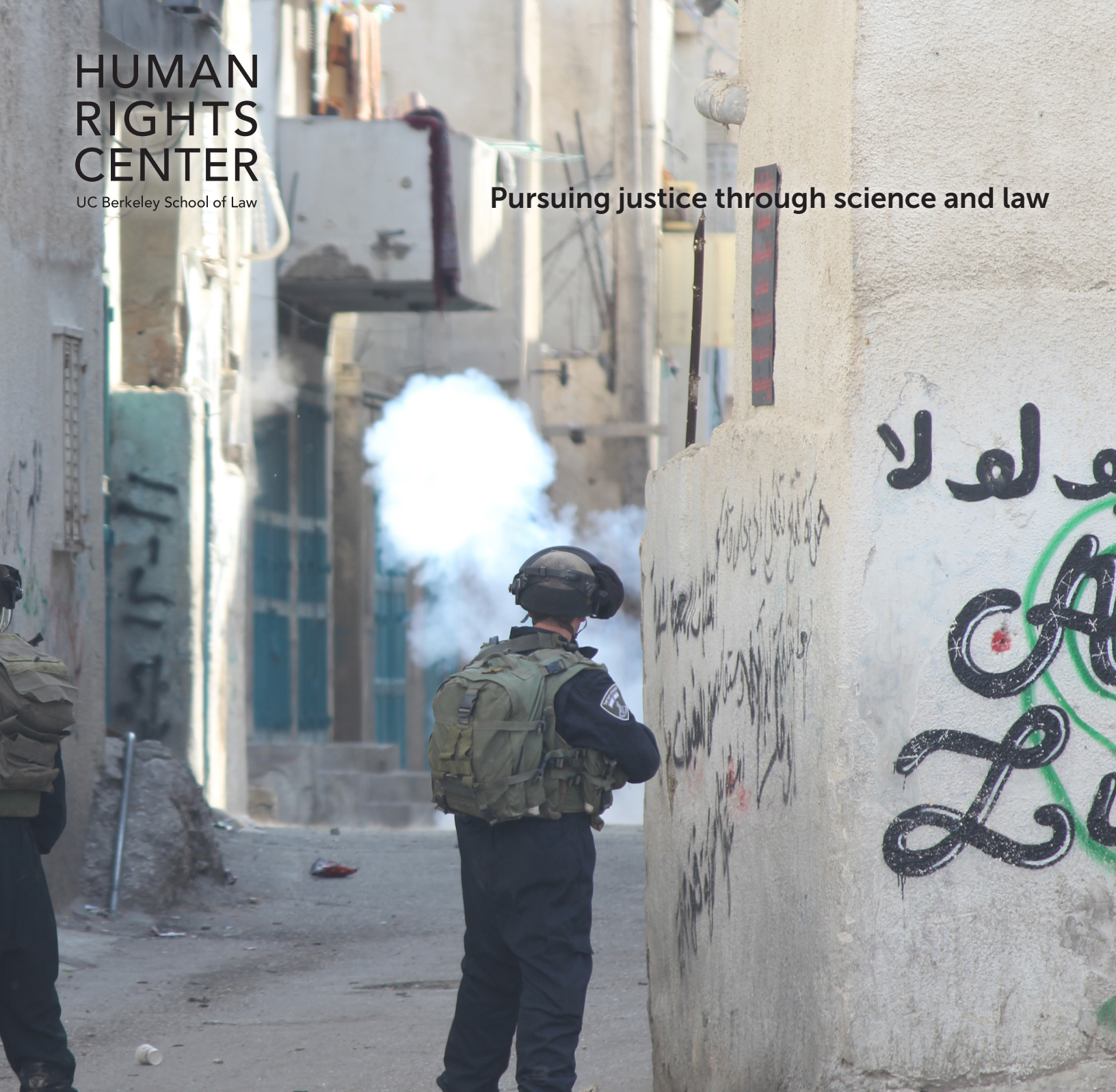


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Health Consequences of
Tear Gas Exposure Among
Palestine Refugees

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Tear Gas Exposure Among
Palestine Refugees

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HUMAN RIGHTS CENTER

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Cover photo: Israeli soldiers fire tear gas in Aida refugee camp in 2014. Photo by Mohammad Alazza.

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I. EXECUTIVE SUMMARY

Introduction

Residents of several longstanding refugee camps in the occupied Palestinian territory (oPt) have reported exposure to tear gas 2–3 times a week for more than a year, but in some months, almost every day. In Aida and Dheisheh camps, both located just outside Bethlehem in the occupied West Bank, residents have alleged that tear gas utilization by the Israeli Security Forces (ISF) is not directly correlated to political tensions, non-violent or violent protests, or stone throwing incidents. These reports raise concerns about the health consequences of such frequent exposure, both physical and psychological, for Palestine refugees and staff from the United Nations Relief and Works Agency for Palestine Refugees (UNRWA) who live and work in these camps. They also raise concerns that the ISF may be using tear gas in ways that are in breach of international norms.

Little is known about the health effects, both physical and psychological, of chronic or repeated tear gas exposure on Palestine refugees or on any population globally. Tear gas is a chemical irritant that is widely used to control riots or quell social protests. It is usually made up of a synthetic CN (chloracetophenone) or CS (2-chlorobenzalmalonitrile) gas or naturally occurring OC (oleoresin capsicum, also known as pepper spray and made from potent capsaicins inside hot peppers) that is intended to cause transient pain, and tearing of the eyes and a burning sensation of the skin. The aim of

these weapons is generally to incapacitate and limit the ability of exposed persons from causing harm and eventually, to disperse unsafe crowds. Newer forms of CS, such as CS₁ and CS₂ are siliconized to increase the half-life and potency of the chemical. The specific chemical utilized by the ISF in recent years is unknown. However, there has been limited evaluation of the more serious impacts of any of the chemical irritants particularly when a population is exposed over extended periods or to high quantities.

The aim of this paper is to (1) identify the frequency of exposure to tear gas among refugees who live in Aida and Dheisheh camps, and (2) categorize potential medical and psychological symptoms (both acute and chronic) associated with this exposure. We also aim to frame the use of tear gas within the social and political context and highlight the personal experiences of refugees, health workers, and UNRWA staff.

To produce a comprehensive evaluation of the context, exposure, health effects and possible solutions, the research team triangulated data from (1) qualitative interviews with focus groups within the camps and health workers who care for these residents, (2) medical evaluations of those who came forward with concerns about significant reactions, and (3) household surveys of the Aida camp residents on exposure frequency and medical and psychological symptoms.

Findings

Researchers conducted interviews and the household survey in August 2017. One focus group was conducted in Dheisheh camp but the household survey and most of the focus groups of refugees occurred in Aida camp. Aida camp has the appearance of a densely populated urban slum with an area of 0.071km² and hosts about 6400 people living mostly in small apartments; this translates into a density figure of 90,000 persons per square kilometer, exceeding the figures of even the most densely populated cities in the world. There are two community centers, two schools, and various small stores and restaurants. There is a small paved soccer field (covered in mesh netting to hold back tear gas canisters) just outside the camp. The camp does not have a medical clinic and most of the area is taken up by 1–3 story buildings and narrow streets (cars can only go through one main central canal and around the outside). Dheisheh camp, on the other side of Bethlehem, hosts more than 15000 residents on about .31sq kilometers. All of Dheisheh camp is located in Area A under the Oslo Accords, and should therefore fall under exclusive Palestinian Authority security control. The majority of Aida camp is designated as Area A however the street abutting the Israeli separation wall, with both the Boys' School and the UNRWA office falls under Area C. However, ISF regularly enter all areas of the camps, where under the Oslo Accords, Israeli security forces were meant to be withdrawn and security control transferred to the Palestinian Authority.

We conducted 10 focus groups with over 75 participants and we interviewed 236 individuals in the camp, ages 10 and older, as part of a household population survey. Of the survey respondents, 67% were female and 39% were students, in a fairly equal distribution of ages between 10 and >66 years old.

Exposure findings: We conducted a household survey that asked questions regarding experiences with tear gas exposure as well as any short or long-term medical or psychological symptoms. The survey was

conducted based on a purposive sampling technique whereby the camp was divided into four geographic sections. Within each section, the first house was selected randomly and then the following houses were selected in a line from the first house. If no participants were available, or they were ineligible or declined to participate, the following house was selected. We chose this sampling methodology to ensure that all general areas of the camp were sampled (including those close to the Israeli separation wall or the ISF military watchtower and those farther away, near and far from the main road, etc.) and to identify the experiences of a broad range of the population within the abilities of the surveyors.

Two hundred and thirty-six interviews were conducted with individuals (ages 10 and greater) living within Aida camp as part of the household survey.

The following is a summary of the results of these interviews: 100% of residents surveyed reported being exposed to tear gas in the past year. Respondents report also being exposed in the past several years to stun grenades (87%), skunk water (85%), pepper spray (54%) and report witnessing the use of rubber bullets (52%) and several also report being witness to live ammunition (6%); 55% of respondents describe between three and ten tear gas exposures in the past month (the month before the survey was carried out), both indoors and outdoors. Indoor locations included homes, schools and places of work. Over the same period, 84.3% (n=188) were exposed in the home, 9.4%(n=21) at work, 10.7% (n=24) in school, and 8.5% (n=19) elsewhere, in a car for instance). Fifty-three people (22.5%) said that they had been hit directly with a tear gas canister in the past.

Medical examinations: Medical examinations yielded testimonies of fainting, seizures, miscarriages, and other concerning events, but no medical findings were identified in this limited examination. We highlight, however, that the absence of physical scarring or other evidence of injuries must not be construed

as absence of serious injury or harm. The nature of the weapons used, the limitations in diagnostic testing, the variable time frame between exposure and the time of our evaluation, and the limited resources and documentation available in medical facilities may contribute to the lack of identifiable physical scars even when real injury occurred.

Mental health effects and consequences: Mental health was assessed based on the household survey and focus group interviews. The household surveys included a section on evaluating mental health based on the internationally accepted standardized General Health Questionnaire (GHQ) with 12 questions that assess general well-being and mental health. From a psychological perspective, our findings from the community group interviews and the GHQ results reveal a pattern and a level of distress consistent with high levels of anxiety and depression including: sleep disruption, acute stress responses, and chronic post-traumatic stress disorder. A consistent pattern of responses across all groups—men, women, and children of all ages—suggest that the residents of Dheisheh and Aida Refugee camps are exposed to very high levels of psychological distress on a regular basis.

Community focus groups consistently and independently reported experiences of fear, worry, physiological reactivity, hyper-arousal, poor and disrupted sleep, lack of safety, and daily disruptions in basic activities of daily living—including caring for children and the sick, participating in school and work life, and engaging in basic family life activities.

The frequency and unpredictability of ISF raids are among the most distressing aspects for people living in the camps. As a result, the ability of teachers to teach and children to learn in school was reported to be regularly compromised in the camps. Children and teachers reported being unable to carry out school activities during and after attacks by ISF, since tear gas regularly enters the school buildings and compounds and children are awoken at all hours by raids. Children and teachers do not

feel safe at school and as a result, teaching and learning becomes very difficult.

Because of the frequency and unpredictability of ISF incursions, parents reported being unable to provide a “safe space” for their children and families, resulting in significant distress. The unpredictability is especially noteworthy as it appears that the ISF raids are not always tied to specific incidents or events in the camps. The seemingly random nature of the ISF raids creates a state of hyper-arousal, fear and worry.

Because the ISF raids are experienced as random, residents of the camps are perpetually on edge, fearing the next attack. The consequences of this chronic hyper-aroused state of fear and worry typically leads to a stress-response syndrome—the “fight or flight” response—which, if chronic, can result in the development of chronic health conditions and overall poor health. The GHQ data support the conclusion that residents of the camps experience increased levels of psychological distress and overall poor health.

Physical symptoms and effects: Responses to the household survey and the qualitative interviews added to the knowledge of the medical symptoms of repeated tear gas exposure. Acute symptoms included loss of consciousness, breathing difficulties, rashes, and severe pain, all of which lasted many hours beyond the time they were directly exposed to the gas. While several years of frequent tear gas exposure normalized the experience to some extent, there was widespread fear of the long-term impacts of the chemical exposure. Respondents associate several chronic conditions with the tear gas exposure: asthma, allergic dermatitis, headaches and neurological irritability, miscarriages, and blunt trauma from canister injuries. There are widespread concerns that the tear gas currently being used is much more potent, long lasting and dangerous than that used in years past, that it causes worse and longer lasting side effects, and that no medical or home remedies or available preventatives are effective.

The household survey gave researchers a window into the general experience of the population of Aida camp. We found that more than a quarter of respondents that work outside the home had to miss work for a tear gas related illness. The survey asked questions about related symptoms at 24 hours after exposure (by which time all symptoms should be completely resolved) and at the time of the survey. More than 75% of respondents reported that eye-related complaints (pain, burning, tearing), skin irritation and pain, as well as respiratory problems lasted more than 24 hours after the exposure. Ongoing symptoms such as headache, difficulty concentrating, eye irritation, sweating, difficulty breathing, coughing, dizziness and loss of balance were attributed to chronic tear gas exposure in more than 20% of the respondents [see charts].

While all respondents had reported being exposed to tear gas in the past year, only about one quarter of all respondents (23.6%) stated that they received medical care because of a tear gas related incident. Of those who did not seek medical care, the majority (65%) felt they did not need treatment; however, 20% noted that no medical care was available and 5.6% were concerned about being identified or arrested.

Findings from interviews: In qualitative interviews within focus groups, we found that residents felt that tear gas use by the ISF was unprovoked and disproportionate. While it has not been possible to verify this as part of this research, it is important to note that such perceptions are grounded in the lived experiences of camp residents, who have been exposed to tear gas time after time, over the course of years. Between January 2014 and 15 December 2017, there were at least 376 confrontations between ISF and camp residents according to UNRWA data. In December 2017, there was a dramatic rise in tear gas utilization in the camps after President Donald Trump's proclamation that the US Embassy would be moved to Jerusalem and ensuing civil protests. Residents from the camp report that ISF routinely

use tear gas during such confrontations. Overall, residents frequently stressed that there are no “safe spaces” in the camp. We identified several themes reported in the qualitative interviews (beyond what was discussed above related to physical and psychological impacts):

1. The tear gas exposure was widespread, frequent, and indiscriminate.
2. The use of tear gas by the ISF was primarily unprovoked.
3. There were no safe places in the camp. Homes and schools are not designed to protect against these exposures and there is no way to avoid it or mitigate the effects.
4. UNRWA is expected to provide more structured protection—both to its staff and the population. This may consist of better protocols for its schools and workers, more advocacy on behalf of the refugees as well as resources, equipment, and protective gear to UNRWA workers.
5. Medical ethics issues are profound: fear of seeking health services, being turned away from hospitals, hospitals not keeping records on these injuries (some non-UN hospitals indicated that they have not kept records since experiencing ISF raids to search for persons and records), and other reported practices of the ISF that include blocking ambulances or attacking them at sites of clashes.

Limitations

This study was framed as an exploratory study to better understand the context and issues faced by Palestine Refugees in Aida and Dheisheh camps and has some notable limitations. This study is a retrospective study of the experiences and reports of the residents of these camps. We could not objectively assess the accuracy or consistency of resident experiences but highlight that their self-reported exposure to tear gas is consistent with media reports and UNRWA documentation of ISF utilization of these

chemicals in the camps. Restrictions by the ISF on video surveillance of these incidents also limit the ability to record incidents for review. Because there are no known quantitative exposure markers for CS or other chemical crowd control weapons, objective measurements of exposure, in the soil or in human fluids, is not possible.

Given the safety concerns of the residents, we are not able to identify participants for follow-up or ongoing research. For the survey, we attempted a geographical cluster sampling methodology to ensure a comprehensive view of the experiences of the camp residents while balancing practical needs. When combined with the relatively large proportion of the population sampled (~3.7% of the total camp population), it does approach the ability to provide population-based prevalence estimates. The survey was also limited in the number of questions we asked. In particular, we did not focus our study on the experiences of young men who are expected to be most frequently involved in clashes and exposed to tear gas because we wanted to gain a more population-based understanding of the exposure.

For the focus groups, while we interviewed a wide range of residents and workers within the camp, we were not able to interview every group that may have unique experiences with tear gas. Given time and space constraints, we also conducted focus group interviews rather than individual interviews, which may limit the amount of personal or private information that was shared.

We also were not in communication with nor did we interview any ISF staff or leadership to understand their view of the incidents we reviewed. We hope that this report will make such communication more viable and increase the transparency around the protocols for use of tear gas and the chemical make-up of the weapons. We also note that we focused our interviews in Aida and Dheisheh camps; we therefore cannot generalize these findings beyond these two sites without further study.

While we acknowledge these limitations, this study does identify some concerning themes

regarding the significant exposure to tear gas and potential health impacts. We highlight the need for further research based on this exploratory review and note that the patterns, consistency, and multiple independent confirmations of the responses in this report stand as a testament to the deeply troubling exposures to tear gas in these camps.

Recommendations

To the Israeli government

The primary responsibility for protecting Palestinian civilians in occupied territory and ensuring their welfare is with Israel, the occupying power. All Palestinians living in the occupied areas are considered protected persons under international law. Israel must respect and protect their rights. We urge the State of Israel to encourage methods to avoid the use of crowd control weapons more broadly. The need to use safe and effective crowd control weapons in limited roles may be accepted but note that the utilization of tear gas in these camps appears to be well beyond any appropriate use. The Israeli government and security forces are the only stakeholders in this context that can limit the use of tear gas, and we urge you to reconsider how this weapon is currently deployed.

We urge the Israeli government to ensure that the Israeli army, border police, and all other security forces operating in the oPt adhere to both national and international guidelines on proportionate utilization of force. ISF must comply fully with the UN Code of Conduct for Law Enforcement Officials and the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials. In countries where police powers are exercised by military authorities or state security forces “law enforcement officials” includes officers of such services.

The UN Code of Conduct requires law enforcement officials to respect and protect human dignity and maintain and uphold the human rights of all persons in the performance of their duty, including the right to life and the prohibition of torture and other ill-treatment.

The UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials provides that law enforcement officials should apply non-violent means before resorting to the use of force, which should be used only if non-violent means have proven to be, or are likely not to be, effective. If the use of force is unavoidable, law enforcement officials must always exercise restraint in its use. Any use of force should be strictly limited to those situations where it is absolutely necessary and strictly proportional to the legitimate aim pursued, and should aim to minimize damage and injury.

We urge Israel to prohibit the deployment of chemical irritants by its security forces in ways that are likely to increase the risk of unwarranted injury and death, such as firing canisters directly at people and using chemical irritants in high concentrations or in confined spaces with limited routes of egress. The ISF should also refrain from using excessive amounts of tear gas or using it in an indiscriminate manner—such as firing it over a wide area, which increases the risk of affecting uninvolved bystanders. We urge the ISF to ensure that chemical irritants are not fired in crowded refugee camps, in residential areas, near schools or near elderly people or others who may have difficulty in escaping their toxic effects.

We recommend that there must be better communication between all parties but that the Israeli forces should make the chemical composition available to Palestinian health professionals. We urge the Israeli government to also share any studies that have been conducted on these chemicals, and any documented regulations or guidelines on its use, the decision-making protocols, and other data that promotes transparency, accountability and better health.

We also urge the ISF to respect international standards on medical ethics and patient privacy, including as laid forth in customary international human rights and humanitarian law. We ask that you not undermine health seeking behaviors and good medical record keeping. We urge ISF to prohibit its

forces from entering or occupying hospitals or other health facilities, or violating patient privacy by confiscating medical records or attempting to interview health care workers regarding patients under their care. Health workers have an obligation to treat everyone seeking care.

To UNRWA

UNRWA is to be commended for raising, including with the Israeli authorities, the protection and health concerns regarding the use of tear gas in the refugee camps.

The participants of this study unequivocally understood that UNRWA had a mandate to protect them. The UNRWA staff (including teachers, sanitation workers, and guards) who we interviewed felt that UNRWA had additional occupational obligations to assist and protect its workers as well.

We urge UNRWA to continue working with outside experts and internal mechanisms to develop guidelines for limiting tear gas exposure and its impacts in the camp in general as well as in UNRWA buildings and schools. While the State of Israel has the responsibility to limit its use of tear gas to safe and proportionate levels, UNRWA is obliged to better protect students and children as well as the general population, and assist in developing “exposure protocols.” UNRWA should also assist in developing protocols for proper management and safe disposal of the used canisters, which are a particular risk to children when they remain in the camp.

UNRWA must also ensure the protection of its staff by providing appropriate personal protective equipment suitable for their work and convenient for use during unanticipated incidents. This equipment may include personal masks, gloves with appropriate protective materials, fans and other ventilator equipment. Simple steps can be taken for protection, such as upgrading and repairing windows and doors in UNRWA schools and offices to limit gas entry into enclosed spaces.

We urge UNRWA to develop and implement systems and programs for addressing the medical

and psychosocial impact of chronic tear gas exposure on communities and individuals living in the camps. The long-term impact of psychosocial stressors on these communities has the potential to exacerbate already distressed communities.

UNRWA should consider finding local research partners that can continue ongoing surveillance programs to document injuries, develop a register of severe cases, and address the problems faced by these refugees.

We also urge UNRWA to share the findings of this report with colleagues in the Israeli government and other local organizations to work together to implement these recommendations and develop a stronger advocacy strategy for camp residents.

To other UN bodies, advocacy organizations and State parties

We note that the use of tear gas in the Aida and Dheisheh camps appears to be at an unprecedented scale. We hope that the international community, other UN actors and state parties can advocate on behalf of these refugees to limit the sales of these weapons, increase transparency on what chemical is

actually being used, and advocate for the discriminate, proportionate, and minimum use necessary of all crowd control weapons.

To scientists and researchers

As this is an exploratory study of an ongoing problem, there is a need for scientific expertise, particularly from Palestinian and Israeli researchers and scientists to develop more rigorous studies, conduct prospective studies of tear gas use, and continue understanding the levels of exposure and health impacts. We also advise expanding this research to include other relevant refugee camps and potentially, other weapons that are utilized.

To the health workers and residents

We thank you for taking the time to speak with the research team and share your experiences. We advise you to continue seeking healthcare services and providing them. We ask that you continue advocating for your rights. We hope that this report illustrates the difficult conditions within which you must live and work and the resiliency that you demonstrate.

II. BACKGROUND

THERE ARE REPORTS OF THE FREQUENT use of tear gas by Israeli Security Forces (ISF) in and around West Bank refugee camps (specifically Aida and Dheisheh camps near Bethlehem) in the Occupied Palestinian Territory (oPt) over the past three years. Reports indicate that some areas of Aida camp have been affected by tear gas 2–3 times a week for more than a year, and in some months, almost every day. These reports raise concerns about the health consequences of such exposure, both physical and psychological, for Palestine refugees and UNRWA staff on the ground, as well as concerns that such use may be contrary to international law. As the occupying power, Israel is required under international humanitarian law to protect the civilian population under its control and respect their human rights. It is also prohibited from imposing any form of collective punishment on them.

Palestinian refugee camps primarily house those people whom the United Nations considers Palestine refugees, defined as “persons whose normal place of residence was Palestine during the period 1 June 1946 to 15 May 1948, and who lost both home and means of livelihood as a result of the 1948 conflict.” UNRWA has a mandate to provide protection and assistance, including through Agency service delivery, to these refugees. In the West Bank, since late 2015, various political issues, new regulations and police incidents have led to intermittently higher tensions in many of the camps, including protest marches and clashes with the ISF.

Tear gas is a general term that refers to chemicals irritants that are often used to control riots or quell social protests. It is usually made up of a synthetic CN (chloracetophenone) or CS (2-chlorobenzalmalononitrile) gas or OC (oleoresin capsicum, also known as pepper spray and derived from naturally occurring capsaicins in hot peppers) that is designed to cause pain, burning and tearing of the eye generally to disperse crowds and limit the ability of exposed persons from causing harm. Newer forms of CS, such as CS₁, CS₂, and CR have been developed that are more potent and durable, lasting much longer, causing more pain and injury and persisting for longer durations in the environment. CS₁ and CS₂ are siliconized versions of CS gas, making the substance more water resistant and potent as well as increasing the half-life.

It is unclear which chemical irritant the ISF utilizes in the camps so the general term “tear gas” will be used to refer to the irritants being assessed in this report. Chemical irritants are banned as a method of warfare during international conflict by the 1992 Chemical Weapons Convention, but are not prohibited under this Convention for civil law enforcement purposes “as long as the types and quantities are consistent with such purposes.”¹

This report also reviews exposure to several other crowd control weapons (CCWs). These include rubber and plastic bullets, “skunk water” (a formula of yeasty foul-smelling liquid deployed through a water cannon), stun grenades (also known as flash-bangs,

these are explosive devices that emit bright blinding light or loud sounds designed to stun or shock), and live ammunition (a general term used to reference any penetrative projectiles and bullets). These weapons and their health consequences have been reviewed previously by the authors.²

Despite the reports of frequent use of tear gas via news media and word of mouth, there is little known about the prevalence of exposure of this population to tear gas and regarding its medical or psychological impacts, particularly in the long-term. Internationally, a recent systematic literature review highlights numerous case reports and several observational studies that have identified some health impacts, including injuries from the canisters, skin burns, chronic eye damage, and significant injury to the lungs and other mucosa.³ The investigators note that there is concern that frequent exposure to these gases, and specifically in dense areas or those with limited ability to egress, might exacerbate injuries.

However, there are no known studies that have specifically researched the health impacts of frequent tear gas use on a single community or with a standardized survey. Research in this area is therefore critical, not only for understanding the issues and advocating for regulation but also due to the impact such exposure may have on health and the ensuing need for more targeted health programs and protection mechanisms.

This study will explore what the prevalence of exposure to tear gas is among the refugee community and if and how frequent exposure to tear gas could have measurable medical or psychological impacts among Palestine refugees.

We hope that this research offers an early attempt to provide some generalizable knowledge on the potential impacts of tear gas exposure over weeks or months and supports the need for future research on this issue.

III. AIMS

- (1) Identify the frequency and quantity of exposure to tear gas among refugees who live in Aida and Dheisheh camps just outside Bethlehem in the oPt.
- (2) Assess potential medical and psychological symptoms (acute and chronic) associated with this exposure.

IV. METHODS

THIS WAS AN EXPLORATORY study to evaluate the exposure to and health impacts of tear gas on the refugee population of Aida and Dheisheh camps. We utilized a triangulation approach based on qualitative interviews, medical evaluations, and a household survey to attempt a comprehensive understanding of the political, geographical, biochemical, and medical factors that may play a role in exacerbating or mitigating health impacts.

Aida and Dheisheh camps, both just outside Bethlehem, were selected for this study based on the frequency of tear gas-related incidents in these two camps. Aida camp, close to the Israeli security wall and important Jewish religious sites, has been the site of heavy ISF activity since late 2015. Tear gas was reported to be used three to four times a week for over a year in news reports and based on reports by residents and UNRWA staff. Dheisheh camp, while farther away from the wall, has witnessed frequent tear gas exposure, primarily during overnight raids in the past several months (particularly in May, June, July, and August 2017, just prior to this study). For this initial research, focus groups and medical evaluations were primarily conducted in Aida camp with a small number of interviews and medical evaluations conducted with Dheisheh camp residents. The household survey was only conducted in Aida camp.

Qualitative Interviews

We conducted qualitative interviews with community members, leaders, UNRWA workers, and

specific community groups to assess the views, concerns, and potential outcomes that various populations may have experienced. Participants were recruited after a public meeting in Aida camp informing community members about the upcoming study and a similar meeting in Dheisheh camp with camp leaders. Participants were eligible if they were residents of Aida or Dheisheh camp or worked for UNRWA in these locations or a relevant external healthcare organization that saw refugee patients. The research team deliberately kept the eligibility criteria open to include various viewpoints and experiences and permit a richer understanding of the issues.

Groups were organized by UNRWA partners and brought together between four and eight participants for 60-90 minute sessions. After a verbal consent process, two to three members of the research team (and at least one interpreter) conducted the interviews, primarily in Arabic with English translation. To ensure participant privacy given the nature of this work, no recordings or photographs were taken.

We conducted interviews using a qualitative open-ended methodology with grounded theory approach to identify major themes of importance to the participants. Initial discussions were framed around exposure to tear gas and the context in which it was being used. We asked about experience with tear gas and general views of its utilization by the ISF. While we asked open-ended general questions

about health impacts, given the group setting of the interviews, we did not probe specifically about individual health issues. We asked about access to healthcare, legal issues, and the political and economic context of its use. We also asked open-ended questions about potential resolutions and outcomes of this issue.

Medical Evaluations

Community members that reported severe injury from tear gas or any current physical complaints were requested to participate in medical evaluations. Nurses at the UNRWA health clinic recruited participants through the community meeting and word of mouth. Adults or children who complained of acute severe impacts of the tear gas, including but not limited to loss of consciousness, seizures, respiratory distress, miscarriages, and any trauma from the canisters were recruited to participate. Adults or children with any chronic or long-lasting effects, including but not limited to asthma or other respiratory disorders, neurological deficits, permanent disability, gynecological or obstetrical issues, or other related concerns were also recruited to participate. The research team included physicians and psychologists with expertise in conducting forensic evaluations. After a verbal informed consent was administered, the research team conducted a brief history, focusing on the incident or incidents related to tear gas and subsequent medical issues. Any relevant physical findings were documented. No photographs were taken to protect the identity of the participants.

Population Survey

We conducted a population survey regarding exposure to tear gas and medical and psychological impacts in Aida refugee camp. Aida camp is roughly 0.071 km² with more than 6000 registered residents living in a densely populated area.

Survey teams consisted of 3–4 members, including a research team member, a community resident-volunteer, UNRWA staff, and an interpreter.

Teams were trained by the research team and UNRWA staff on survey procedures, informed consent and ethical research, and appropriate sampling and interview techniques. At least one team member in each team was qualified in Psychological First Aid.

Survey sampling: A geographic household cluster sampling methodology was employed to ensure diversity in geographic region of the homes within the camp and diversity in the ages and genders of the respondents. The camp was divided by the research team into four clusters to account for the geographical diversity (the clusters were as follows (i) close to the wall and the ISF security tower, (ii) in the interior of the camp, (iii) close to the main road; and, (iv) a distant corner of the camp, away from where typical clashes took place. Each survey team selected the first home randomly and asked to interview all household members, ages 10 and older, after a brief introduction. If members agreed and consented after being informed of the details of the survey, the research team administered the survey to each participant. After the first household, the research team would select other houses based on proximity to the first house.

The selection of respondents was designed to be unbiased and offer a balanced view of the general population of the camp (over 40% of the camp's residents are under 14 years old).⁴ All persons, ages 10 years and older (regardless of gender, race, and ethnicity), residing in Aida camp during the time of the interview, and living in the household being interviewed were eligible to participate in the survey.

We aimed to survey children (ages 10–17), adult men and women ages 18 or older (including pregnant women), the elderly, and those with chronic medical conditions. We hoped that a household survey would be the best method to reach the elderly, the disabled, and women who often have childcare responsibilities and are less likely to be able to leave the house. To ensure children and working adults were able to participate, we conducted

the surveys during school holidays and Friday and Saturday mornings when families were most likely to be home.

Interview procedure: Interviews took place over two days in August 2017. In each household, the interview team would request interviews with all residents ten years or older. Age was verified by asking the parents and children. After securing consent from each member of the family, and parental permission/child assent for any children under 18, participants were asked to complete the survey as an interview with one of the survey team members unless a participant preferred self-completing the questionnaire (in which case he or she was given the opportunity to do so). All surveys were conducted in suitably private areas, most comfortable for the participant. Research team members were available to answer any questions and clarify their roles or the purpose of the survey.

Survey tool: This survey was based on previously validated questionnaires to identify health and psychological issues, as well as direct and indirect injuries from tear gas, and general perceptions of health

in the community. The survey tool was adapted from the General Health Questionnaire (GHQ-12),⁵ a validated survey tool available in multiple languages including Arabic and the validated Assessment of Chemical Exposures General Health Survey,⁶ developed by the United States Centers for Disease Control (CDC) to assess exposure and injuries from chemicals. These surveys were combined and adapted with additional questions specific for this context.

Data analysis: Prevalence and population estimates were calculated using simple descriptive statistics. Comparisons between groups were based on Pearson's Chi-Square testing for statistical significance. Data was analyzed using Stata 14.2.

Ethical considerations: The household survey protocol was approved of by the University of California, Berkeley, Committee for Protection of Human Subjects (Institutional Review Board). The qualitative interviews and medical evaluations were conducted according to standard practices for ethical human subjects participation but were not formally reviewed.

V. FINDINGS

THE STUDY WAS CONDUCTED over eight days in August 2017, primarily in Aida camp with several visits to Dheisheh camp and local healthcare facilities. Aida camp has the appearance of a densely populated urban area with people living mostly in small apartments. There is very little open space or areas for leisure activities. On walking to and from the camp each day, the research team frequently identified tear gas canisters in the road, near a small playground and paved games field, on the school campus, near homes and apartments and at the UNRWA office. The research team was also witness to several tear gas related incidents while it was conducting research or touring the camp. There were no major protests or clashes during the study period. Focus group and medical evaluations were conducted at the UNRWA Boys School Library (school was out of session for summer holidays).

Qualitative Interviews

The research team conducted qualitative interviews in group settings with more than 75 community members. Overall, we met with 10 groups of participants. These included groups with elementary-age children, middle-school aged children (12–14), high-school age children (14–17), elderly (>70 years old), pregnant or breast-feeding women and mothers with very young children, sanitation workers, school teachers, guards who secure the schools overnight, and with community leaders. Separately, we also traveled to five external healthcare facilities

(including one paramedic center) to discuss the views and concerns of health workers treating tear gas victims. These interviews were conducted with hospital leadership, paramedics, nurses, physicians and surgeons at several health facilities in the Bethlehem area who treat refugees from these camps.

Across all groups, we identified several important themes running through the interviews that residents highlighted:

- (1) The tear gas exposure was widespread, frequent, and indiscriminate.
- (2) The use of tear gas by the ISF was primarily unprovoked.
- (3) There were no safe places in the camp. Homes and schools are not designed for these exposures and there is no way to avoid it or mitigate the effects.
- (4) While several years of daily tear gas exposure normalized the experience to some extent, there was widespread fear of the long-term impacts of the chemical exposure. They associate several chronic conditions with the tear gas exposure including: asthma, allergic dermatitis, headaches and neurological irritability, miscarriages, and blunt trauma from canister injuries
- (5) Interviewees have suffered from significant health symptoms of the tear gas acutely. There are widespread concerns that the tear gas currently being used is much more potent, long

lasting and dangerous than that used in years past. There is also concern that it causes worse and longer lasting side effects and that no medical or home remedies or available preventative are effective.

- (6) Residents and staff felt that UNRWA has an obligation to provide more structured protection, both to its staff and the population. This may consist of better protocols for its schools and workers, more advocacy on behalf of the refugees, as well as resources, equipment, and protective gear to UNRWA workers.
- (7) The current conditions lead to a sense of powerlessness, fear, anger, and hopelessness which have impacted both children and adults dramatically.
- (8) Medical ethics issues are profound, as there is fear of health seeking; being turned away from hospitals; hospitals not keeping records of these injuries (for fear of being raided); and reported ISF practices of blocking ambulances or attacking them at sites of clashes.

Of note, the following sections contain relevant quotations (unattributed to protect the identity of the interviewees). Other select quotations and comments are found in the Appendix.

Every study respondent noted exposure to tear gas in the past month, often several times in the past week. They noted that exposures occur in homes, the schools, the street, and nearly everywhere else in the camp. Tear gas is used at all times of the day, from the early morning, during school or work hours and in the middle of the night (often for raids to identify and arrest individuals within the camp). In Dheisheh camp, much of the recent tear gas usage has been between 1 and 4am, during overnight raids into the camp to locate and arrest individuals. In Aida camp, incidents involving tear gas have occurred frequently both day and night in 2017.

The community members felt that the ISF uses tear gas not as a defensive weapon to protect against

riots or to defend public safety (as it has been designed for), but rather as an offensive weapon. They noted that tear gas exposure is not related to protests but happens anytime. One interview said “they use it when they are bored, when they want to provoke a clash, or when they want to get into the camp.” The researchers asked specifically about the use of tear gas on protestors, particularly those who throw stones. Both student groups and general community members highlighted that this is not the case. They said that throwing stones occurs occasionally but it’s essentially a feeble futile gesture of protest and “is unrelated to the use of tear gas.” They said that the ISF often throws tear gas canisters as a provocation to incite young people and escalate violence. They pointed to several incidents where peaceful events like a child’s birthday party or family picnics were disrupted without any cause. There is recorded evidence of this by the community center’s cameras, which were shared with UNRWA. Primarily, the respondents noted that tear gas just lingers in the air around the camp and impacts everyone from babies to the elderly, the vast majority of whom had no role in stone throwing or clashes.

Almost every interviewee noted that they had “no safe spaces” where they could get away from the tear gas or avoid being exposed. They noted that the gaseous nature of the chemical, and the quantity they are exposed to made closing doors or windows futile, and sometimes dangerous (if the gas was stuck inside). The urban geography of the camp and limited resources of the refugee population limited proper ventilation and caused the tear gas to linger “often for 3 days in the home or school.” The seemingly arbitrary timings of the exposure limit the ability to prepare (by leaving or closing doors/windows) before the gas is already inside (especially when it incidents occur overnight while people are sleeping). The limited resources in the community led to poor ventilation, broken windows and cheaply made structures that were not well equipped for blocking gas from entering, or removing it quickly once it is inside.

Many interviewees remarked early in the interviews that “this is normal” or “we are used to this.” But as the interviews went on, they noted that while they have gotten accustomed to frequent tear gas exposure, they were deeply concerned about the long-term impacts of this exposure. One woman noted that, “if it can hurt this bad within seconds, what does it do over years?” A man asked, “We don’t know if it causes cancer or chronic asthma. I am sure we will die young because of this.” One mother noted that young children may be more at risk, “my baby was exposed by the time she was 2 months old. By the time she is my age, what will happen? Her skin is so delicate and her lungs are so small and thin, I’m sure she will suffer bad effects for years.” Interviewees noted asthma, chronic allergic dermatitis and eye pain and headache as long-term impacts they are already suffering. They also noted that those people that were hit directly by canisters had not only bruises, but also broken bones and internal injuries.

In a related theme, one frequently cited issue across groups was that the tear gas being used by the ISF over the past one to two years was dramatically more potent, longer lasting, and poisonous than that used in previous years. Sanitation workers cited that the whitish powder will sting even when cleaning up the canisters days later, whereas it used to dissipate quickly. Many interviewees noted that they used to keep onions or strong perfumes around to mitigate the effects but that these home remedies are not effective at all against the currently used tear gas. They also worried that this tear gas, rather than dissipating within a few minutes, “will last within doors for up to 3 days, and that the smell and pain caused is much worse than before.” Several parents said that children will often pick up the used canisters (“there are so many that it is hard to clean up all of them”), and play with them, causing a secondary contamination and reemergence of the same symptoms.

The interviewees expressed the feeling that medical remedies at the hospital, such as oxygen or irrigation, were of no benefit. Many interviewees noted that “before, we could wash off with water.

But with this stuff, water actually makes it worse!” There was widespread fear that the ISF was testing a newer more potent type of tear gas on these refugees without any precautions. “They test it on us and then they sell it to other countries as safe. But it’s not safe. We are all suffering.” Acutely, interviewees remarked on the burning pain to the eyes, oral mucosa, skin, and throat. They said they felt like they were choking and couldn’t breathe. “Every time, I feel like I’m going to die. You don’t know that you will survive. It’s like hell every time,” said one interviewee. Others also noted that even when out of the cloud of smoke, the acute effects can last hours and often more than one day. “It’s doesn’t just go away, I can’t see or work or think all day.”

These fears of testing, and lack of transparency of the chemical composition, in addition to the frequency of use and poor communication have further deteriorated any good faith that was remaining with the ISF. Community members and UNRWA staff that we spoke to (guards, teachers, and sanitation workers) spoke of UNRWA’s responsibility and duty to protect refugees. They felt that this continuing attack derogated their freedoms, violated human rights, and significantly impacted their health. “It is UNRWA’s job to protect us. It’s been 1 year, 2 years, 3 years with weekly tear gas. What are they doing?”

Teachers and school guards asked for specific protocols and guidelines on what they should be doing in times of attack. They wanted to see if the school could have a safe room where all the windows closed properly and they could have students go to during times of attacks.” At the least, they wanted written guidelines on how best to avoid exposure or mitigate injury, especially for their young students who were at risk.

The guards were particularly concerned with overnight exposures when no one else was around. “I could die and no one would know.” Several guards thought that there should be two guards posted at night so that there would be some communication. “There should be two of us, so if one is injured, the other is there.” They also felt that the lack of phones,

preventative exposure equipment (gas masks, gloves etc.) worsened their health issues in the long term. They asked if the problems with the guards area—the broken windows, no fan, no running water could be fixed so that even when they were exposed, they could limit injury.

Sanitation workers also noted that they felt that UNRWA, as their employer, had a responsibility to provide better protective equipment and appropriate guidelines. They currently pick up used tear gas canisters, often daily, with either bare hands or basic canvas gloves that wear down easily. They noted that some gas masks are available at the UNRWA offices but these are inconvenient because when a tear gas attack does occur, it is not possible to get back to the UNRWA offices and check out a mask. They also note that there is no set location or protocol for disposal of the canisters, which might be of use. “We don’t know what to do with them. They burn our hands and nose when you touch them. It should not be safe to throw that in the regular dumpster.”

Overall, we noted in the interviews that the community members had a sense of powerlessness and fear that were pervasive across the community. They had almost no ability to control the exposure to tear gas or mitigate its health effects. A few people noted that the interview was the first time anyone had asked them about health and tear gas. One guard went on to say: “They always ask about the buildings and equipment. But this is the first time anyone has asked about how this affects me.” Students noted that “after the gas, we are supposed to sit in class and study. But how can we concentrate? Our eyes are burning and we are scared it will happen again.” Another student said, “I can’t sleep at night because of the gas. Then I am tired in the morning and can’t focus at school.” The community’s sense of injustice about these attacks was profound, and it has deeply impacted their lives day to day.

Finally, interviews with community members and with healthcare workers elucidated several deeply concerning ethical issues. Community members noted that there was not much that the hospital

could do beyond giving oxygen and therefore people have stopped going to healthcare facilities. But many others said that they would like to see a health worker but “sometimes, they turn us away so we have to drive far away to another hospital.” When asked why they would be refused care, they noted that “they don’t want trouble with the ISF, they just don’t want to deal with us.” Being turned away from a hospital when in extreme distress can significantly undermine the faith in the medical workers to work with and heal a community.

When talking to health workers, several issues were identified. They noted that they “never keep records on violence cases.” Because of several recent incidents where the ISF raided hospitals and confiscated medical records, health workers believe that keeping records on these patients would violate their oath to protect them. They also noted that the ISF will call hospitals and ask for specific persons, putting hospital staff in a difficult position. Lack of record keeping makes follow up on chronic conditions, monitoring of exposure and long-term impacts, and general medical care for these individuals more difficult. Raids of hospitals and violations of patient privacy can undermine trust in healthcare and drive those most in need away from seeking help. Some paramedics and physicians also noted that checkpoints and other forces can block ambulances or directly target them. One medic noted, “It’s crazy. Sometimes, they call us and tell us there will be cases so come here. Sometimes, they call us after an incident and ask us where we took people so they can go arrest them.” He noted that he felt the stress of this job made his regular private life more difficult. Another medic said, “They fire tear gas directly at the ambulance or at people as they are running towards the ambulance.”

Medical Evaluations

The research team conducted basic medical evaluations of several community members who had specific, severe incidents of tear gas exposure. Individuals were identified by nurses and community volunteers

in Aida and Dheisheh camps and requested to be evaluated and interviewed. In summary, the research team primarily evaluated children who had severe initial reactions to tear gas exposure. The medical evaluations were limited because of the time between the incident and the evaluation, the lack of specialized diagnostic equipment, and the nature of the chemical exposure that would not necessarily lead to identifiable long-term injuries. We note that while the evaluations did not identify any permanent disabilities, this was an expected finding. As noted in the Istanbul Protocol (the manual on Effective investigation and documentation of torture and other cruel, inhuman or degrading treatment or punishment), “the absence of such physical evidence should not be construed to suggest that [abuse] did not occur, since such acts of violence against persons frequently leave no marks or permanent scars.”⁷

This edict applies equally for chemical weapons injuries.

Cases included

A 9-year-old boy who was very close to a canister when it exploded during a protest. He lost consciousness for 15 minutes and had to be carried to a nearby store. He was noted to be foaming and having a difficult time breathing. He recovered since the incident but is terrified of tear gas now and concerned that it may have caused his now-chronic asthma. On exam, the child was well appearing.

Three children aged 3, 6, and 8 years who were exposed in their home by an errant tear gas canister that landed in their living room six months ago. They also are exposed to frequent tear gas on the verandah of their home (at least once a month) and in the camp generally. All the children have asthma without any family history of respiratory issues and no smokers in the home. They get frequent respiratory infections that parents attribute to the chemical exposure. On exam, children were well appearing. The oldest child states, “I’m not afraid, I

will defend myself.” The 6-year-old said, “The soldiers broke our door at night. They shot bullets. I’m afraid of bullets.”

A 6-year-old girl and her 40-year-old mother who live in the camp. Her 13-year-old brother was killed by live ammunition by ISF two years ago when he left the home to buy chocolate in their neighborhood. The mother suffers from depression and exhibits diagnostic criteria for PTSD. She has signs of insomnia, stress, avoids triggers (chocolate) and thinks about the incident “every minute.” She also noted that she has frequent headaches and a history of cardiomyopathy since the incident. The 6-year-old child notes, “I’m not scared. I will fight them.” The child notes an inability to sleep until 1 am: “I just can’t sleep. Everyone in my house is sad.”

A 3-year-old boy had severe respiratory distress when he was exposed last year and went to the hospital. The mother notes that he was violently coughing and tearing from his eyes. Now, he has frequent tonsillitis and colds. The boy states, “I’m not afraid of the gas.”

A 12-year-old boy with asthma and rashes that have worsened since being exposed to tear gas regularly. He states, “It’s scary but it’s normal. I’m scared of their guns more but the gas, it hurts. When I smell it, it burns and I feel dizzy.” His last exposure was three days previously inside his home.

A 9-year-old boy who has developed frequent rashes each time he is exposed to tear gas. His mother says, “It’s not just the burning and redness like the others, its gets bumpy and itchy” and takes days to heal up. He notes, “It gets more itchy and painful every time.” Child is well appearing during the examination but there is a concern for a hypersensitivity reaction to the chemical.

A 25-year-old woman who suffered a late trimester miscarriage several days after a tear gas canister landed on her patio. She had severe respiratory symptoms during the incident and is concerned that

the miscarriage was directly related to her breathing problems and stress since she had no prior obstetrical abnormalities.

A 30-year-old woman and five-month-old infant who is currently breastfeeding notes that she is more tired and it's harder to breathe during the day of and after exposure to tear gas. She is concerned about the exposure in the infant. "He seems okay now but how will this affect him in the years to come?" Both are well appearing on examination.

Results of the Household Survey

We interviewed 236 individuals in the camp (3.6% of the total estimated population of the camp of 6400 individuals). Not all respondents answered all questions.

Demographics of Responders

We included respondents of all genders, ages 10 or greater in the survey methodology. We found that we had a broad range of ages within the respondents (see Figure 1). Of the respondents, 67% were female and 33% were male; 39% were students, 10% professionals, 8% laborers, 33% housewives, 6.5% unemployed, and 3.5% other.

Exposure to Tear Gas and Other Crowd Control Weapons (CCWs)

Respondents reported exposure to several different types of crowd control weapons (CCWs) including tear gas (100%), stun grenades (87%), skunk water (85%), pepper spray (54%) and rubber bullets (52%) over the past 1 year; 6% of respondents also noted they were directly witness to the use of live ammunition being used inside the camp (see Figure 2).

Respondents described the chemical exposure in the following terms:

- 92.3% (n=217) described it as white in color. 89.7% (n=204) described it as a gas rather than powder-like or oil.

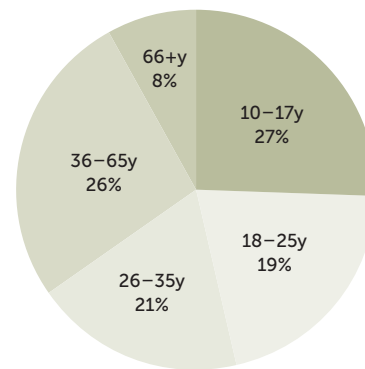


FIGURE 1 Age range of respondents (n=229)

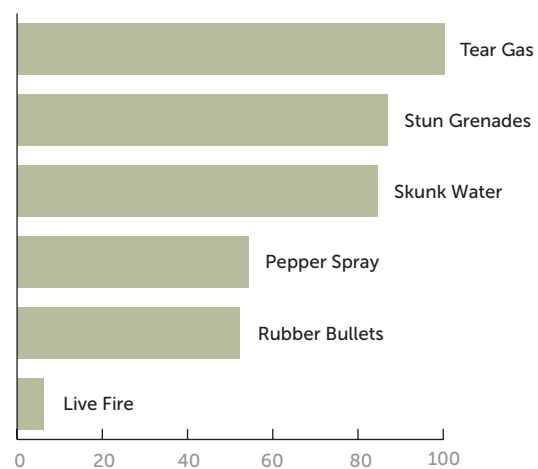


FIGURE 2 % of Respondents Exposed to CCWs (n=236)

- 53% (n=121) of respondents have experienced hand-held canisters but the majority 85% (n=194) have witnessed jeep mounted automatic canister firing. Others (n=5) mentioned that they did not see where the gas came from, or that other weapons were being used.
- Canister forms of the tear gas were seen by 72% (n=166) of the respondents and grenade forms were frequent as well (55.6% (n=128) of the respondents. Spray forms were far less common (4% n=10).

Almost all respondents had frequent exposure to tear gas. Most respondents had greater than 21 exposures

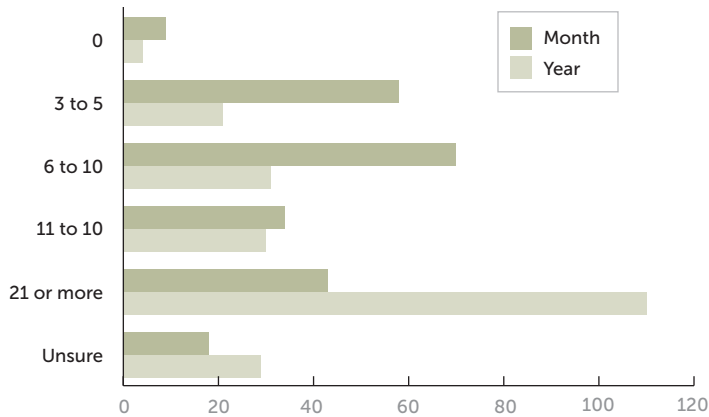


FIGURE 3 Reported number of exposures (n=232)

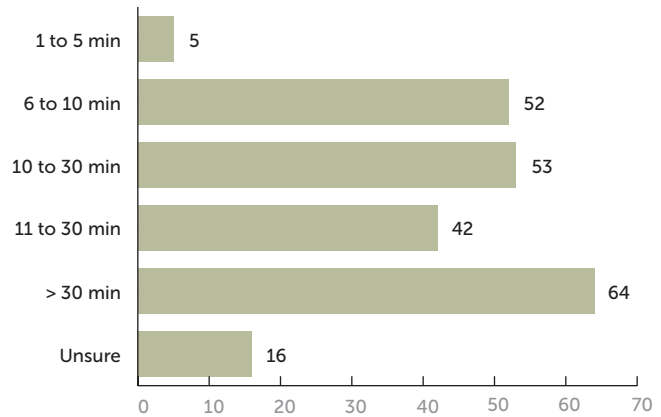


FIGURE 4 Length of time of exposure in incidents over the past month (in minutes) (n=232)

over their lifetimes (49%, n=110) and 55% (n=128) had between 3 and 10 in the past month (see Figure 3).

In addition to asking about the number of exposures, we also asked questions about the length of time that exposures in the last month lasted. Respondents answered that exposure time of greater than 10 minutes (18%) and greater than 30 minutes (27.5% of respondents) was not uncommon (see Figure 4).

Responses to the survey highlighted that nearly everyone in the camp is being exposed to tear gas in homes, schools, workplaces, and on the street/outdoors. Residents reported that 84.3% (n=188) were exposed in the home, 9.4%(n=21), at work, 10.7 (n=24) in school and 8.5% elsewhere (n=19, in a car for instance). Fifty-three people described being hit directly with a tear gas canister in the past.

Participants were asked how they attempted to mitigate the exposure to tear gas. Most (76.9%, n=170) say they stay in place when they are exposed to tear gas indoors. Only about half of respondents (48.7%, n=113) try any precautionary measures when tear gas is fired. On open-ended responses, these primarily included closing all the doors and windows, but conversely, sometimes opening windows and turning on a fan. Some respondents attempt putting a wet towel on the face, smelling an onion, or opening a bottle of vinegar, baking soda, sage, detergent, or perfume to counteract the effects. People also tried removing clothing (n=28) and

washing with water (n=29), using soap and water for removal (n=37) and attempted fleeing from the area to get fresh air (n=127).

Medical Findings

Just over 27 percent (27.5%) of the respondents that work or study outside the home (n=25 out of 127) noted that they have been off of work at least once because of tear gas related illness. Only about one quarter of all respondents (23.6%, n=53 out of 227), however, stated that they received medical care because of a tear gas related incident. Of those who did not seek medical care, the majority (65%, n=105 out of 162) felt they did not need treatment, 20% (n=32) noted that no medical care was available, and 5.6% (n=9) were concerned about being identified or arrested.

The survey also asked about symptoms and secondary impacts of chemical exposures at 24 hours after the incident and at the time of the survey. Responses (Figure 5) highlight that nearly all body systems were affected on the day of the incident. On the day of the exposure, eye symptoms were the most frequent. These included irritation and burning of the eyes (92%) and increased tearing (91.5%). The mouth and throat, skin, and breathing were also significantly impacted (>75% of respondents had burning throat, runny nose blurred vision, skin pain or burning, headache, and coughing). While most

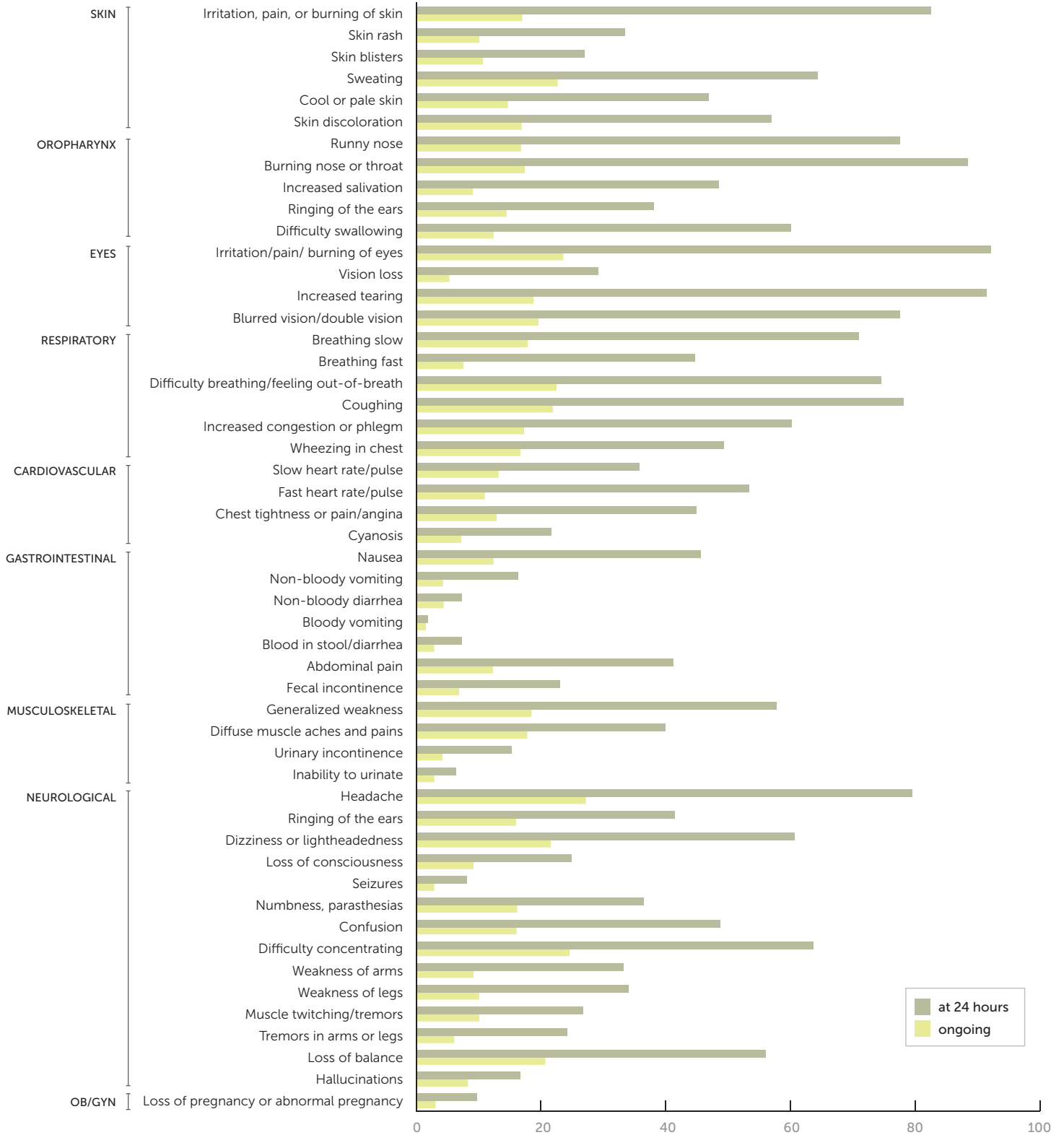


FIGURE 5 Percentage of respondents with symptoms (ongoing and at 24 hours)

of these symptoms appeared transient, more than 20% of respondents had ongoing issues with headache, difficulty concentrating, eye irritation, sweating, difficulty breathing, coughing, dizziness, and loss of balance. Greater than 10% of all respondents had impacts on their neurological systems (muscle tremors, weakness, confusion or tinnitus, paresthesias, and muscle aches and pains), respiratory systems (wheezing or shortness of breath, slow breathing, increased phlegm production), throat or mouth issues (burning sensation, runny nose), gastrointestinal system (nausea, abdominal pain), heart related issues (chest tightness or pain, palpitations).

Psychological Findings

The psychological findings are based on data collected from community focus groups and from questionnaires (GHQ-12) that were administered to each household. Based on the community focus groups and the results from the GHQ-12 data, the psychological impact of tear-gas exposure in Aida and Dheisheh refugee camps is pervasive and impacts all aspects of community and individual functioning— social, educational, work, and family. In fact, there appears to be no domain of existence that is exempt from tear-gas exposure. As a result, the psychological impact is significant. There are three foundational elements of the psychological impact on individuals and communities: (1) The seemingly random, yet chronic, exposure to tear-gas raids, (2) The absence of any safe spaces in the camps to seek protection and safety, and (3) The pervasive feeling of helplessness, fear, and anxiety about not being able to protect themselves, their families and their community from being attacked.

Contextualized within their history of dispossession and living as refugees for up to four generations, the residents of Dheisheh and Aida report experiencing alarming levels of anxiety, depression, fear, sleep disturbance, cognitive dysfunction, and a range of physical complaints. They experience this level of distress on a regular, if not daily basis and it is pervasive and impacts every aspect of life.

GHQ Results

The General Health Questionnaire, Arabic Version (GHQ-12), was utilized to quantify aspects of the psychiatric impact of tear-gas exposure. The GHQ is a widely accepted, reliable, and valid measure of psychiatric symptoms. The authors of the GHQ state:

*The General Health Questionnaire (GHQ) is a screening device for identifying minor psychiatric disorders in the general population and within community or non-psychiatric clinical settings such as primary care or general medical out-patients. Suitable for all ages from adolescent upwards, it assesses the respondent's current state and asks if that differs from his or her usual state. It is therefore sensitive to short-term psychiatric disorders but not to long-standing attributes of the respondent. The self-administered questionnaire focuses on two major areas: The inability to carry out normal functions, and the appearance of new and distressing phenomena.*⁵

The version used in this study was validated in Arabic and has been previously used in Palestine by one of the authors (JG).⁸ The GHQ-12 has 12 questions designed to evaluate minor psychiatric distress. People answer in a Likert-type fashion for each question and were scored as: Never (1), Seldom (2), Sometimes (3), and Often (4). Answers were scored numerically.

The results of the GHQ-12 questionnaire data reflect a pattern and distribution among all groups— age and gender—of people who are experiencing psychological distress, including symptoms of depression, anxiety, general distress, poor cognitive function, and general poor mental health. No group was exempt from this pattern of psychological distress and suggests that in addition to individual levels of distress, that there is a level of community distress that pervades the camps.

Across all interview groups of community members—and across gender and age—the descriptions were consistent and troubling. People consistently

described a pattern of seemingly random, brutal, excessive, and targeted attacks by the ISF in their use of tear gas on the camps. The resultant chaos, confusion, and distress caused disruptions in all aspects of people's lives, including not being to work, not being able to engage in school, and disrupted functioning in the home.

During tear-gas raids, camp residents described feelings of being "on edge," fearfulness, general anxiety, shortness of breath and difficulty breathing, sweating, rapid heart rate, difficulties with concentration and attention, feeling faint, and unstable. Following tear-gas raids, camp residents noted fatigue, anxiety, fear about going outside, ruminations about safety of their families, exhaustion, and a general sense of distress. Children in school complained about not being able to concentrate or attend to their studies, and fears of more attacks. Most people reported significant cognitive disruptions from acute tear-gas exposure and most students interviewed reported difficulties with school performance. Across all groups, people complained of a chronic sleep disruption (since many raids occur at night or early in the morning) resulting in chronic fatigue and cognitive impairments.

The symptoms described are consistent with an acute stress disorder, and post-traumatic stress disorder, and a general stress response syndrome. The consistent descriptions of elevated physiological reactivity suggest individuals are experiencing a chronic "fight or flight" reaction and this could portend very poorly for maintaining stable and good health for residents exposed to tear gas on a regular basis. The "hypothalamic-pituitary axis," or HPA, is well researched and is the bio-endocrine foundation of the stress response.⁹

In fact, chronic traumatic stress exposure is typically correlated with high levels of cortisol, a stress hormone that the body produces and releases under duress. Chronic and high levels of cortisol are

associated with the development and maintenance of multiple negative health consequences, including cardiovascular disease, diabetes, and obesity.⁹ In addition, and across all groups, people described daily disrupted sleep—including difficulty falling asleep, staying asleep, and awakening early.

The combination of chronic elevated cortisol and HPA activation, together with chronic sleep disruptions, is an especially toxic combination for people and often leads to increased morbidity and mortality. It can disrupt the ability of the brain and central nervous system to function, making it difficult to maintain optimal attention, concentration, focus, and memory. The longer-term consequences of chronic HPA activation have been reported to also increase the likelihood of developing and maintaining general ill-health and increased morbidity and mortality.

Another aspect of the responses from the community focus groups that raised concern was the repeated comment: "Nothing we do makes a difference. If we are quiet they use tear gas, and if we protest, they use tear gas." The sense of individual and community helplessness and inability to prevent tear-gas raids was a prominent experience. This kind of response is consistent with the concept of "learned helplessness."¹⁰ Described by Dr. Martin Seligman, it is a state in which a person, or a collective, suffers from a sense of powerlessness, arising from a traumatic event or persistent failure to change events that are causing the trauma. It appears that an individual and community sense of learned helplessness often pervades the experience of people living in the camps. The concept of learned helplessness is frequently utilized as the basis for developing state-sponsored torture projects.¹¹ The intention of creating a sense of learned-helplessness is typically to induce subservience to authority and a sense of acquiescence to being dominated so that individuals and communities will accept their conditions.

VI. CONCLUSION

THIS REPORT USES DATA collected in qualitative interviews with camp residents and UNRWA workers, as well as a household survey of exposure frequency and medical and psychological symptoms based on standardized questionnaires. The information collected confirms that the use of tear gas in Aida and Dheisheh refugee camps is extensive and likely beyond the level that has been seen elsewhere around the globe. We note that all strata of the community have frequent exposure to tear gas and within myriad contexts. While the medical impacts, in the short term are significant and borne out in the symptoms that study participants have cited, the long-term medical impacts are largely unknown but given the scale of exposure in these refugee camps, is concerning. The psychological impact, identified both in interviews and within the general health survey widely throughout the camp, are profound and suggest that residents are experiencing high levels of psychological distress in relation to tear-gas exposure, or in anticipation of exposure.

Based on numerous interviews inside the camp, this level of exposure to the entire community appears disproportionate and frequently unprovoked. We found that everyone—from young children to the elderly—is being exposed to tear gas, often several times a week. While some utilization of tear gas may be justified for narrow and specific security purposes, the widespread exposure to tear gas among all strata of the population is in discordance with all publicly available international guidelines

on how it should be used. Even during a protest, or potentially a violent riot, the use of crowd control weapons such as tear gas should be restricted to when other options, such as communication or individual arrests, have already been tried or are not practical. This does not appear to be the case in either Aida or Dheisheh camps where tear gas is often being used as a first line agent, and for situations outside of the crowd control context.

The use of tear gas, particularly in the past 12 months, appears to be excessive. In Aida camp, the results of the study find that people are being exposed to tear gas in their homes, schools, and other locations when they are not posing any obvious or immediate threat to public safety. In Dheisheh camp, the use of tear gas appears to be utilized as an offensive tool to limit retaliation when ISF officers enter the camp to arrest or threaten individuals. Based on recognized uses of tear-gas, this appears not to be consistent with the principles of tear gas utilization, especially in closed and restricted communities like refugee camps. In both of these situations, the frequent and excessive utilization of tear gas is not considered appropriate.

The utilization of tear gas appears indiscriminate and for the refugee population, nearly impossible to avoid. Tear gas, by its nature, is indiscriminate. Even when intentioned for a specific target, it can disperse widely and be affected by wind and other weather conditions. From our research, it appears that the tear gas does not appear to be used in

any targeted form. During our tours of the camps, we identified tear gas canisters in people's homes, in playgrounds, and both on the outside and the interior of the camp. Interviews with the residents illustrated that use is not limited to protests or to those at risk of causing violence. In interviews with healthcare workers, we found that even ambulances and other health services can be targeted with tear-gas. Because of the close quarters and geography of most camps, and especially in Aida camp, it is not possible to utilize tear-gas in a targeted manner. The tear gas necessarily spreads throughout the camp, such that most—if not all—residents are exposed.

One underlying sentiment that all the residents stressed was that there was no safe space where residents could find. Homes, schools, and mosques, indoors and outdoors, were all at risk, both deep inside the camp and toward the main roads. Given the high density of the camp and the very limited possibilities for egress, the exposure is likely higher in this vulnerable population than in populations with less density, better ventilation, or the ability to flee. We highlight that tear gas can cause more severe injury when vulnerable people, such as children and the elderly, who are a high proportion of the camp population, and those with chronic medical conditions, are exposed.

While this research is limited to primarily self-reported experiences, we found that virtually everyone we interviewed or surveyed reported that they had some medical or psychological symptoms attributed to tear gas. We also note that the household survey was conducted in a purposive cluster sampling approach to ensure that we had a better understanding of the exposure experiences of the

entire camp population. In addition to the expected side effects such as eye and skin pain in the immediate time frame, a majority of respondents also reported significant side effects at 24 hours and more than 20% of respondents had ongoing neurological, ocular and respiratory symptoms at the time of the survey. This research has also found acute stress disorder, post-traumatic stress disorder, and a general stress response syndrome to be pervasive in the population.

We hope that discussing the medical and psychological impact of tear gas will provide a forum for more engagement on this issue. While there are significant limitations to this research, detailed in the Executive Summary, these findings suggest that there can be profound health impacts of this scale of exposure. One hundred percent of the population of the camp has been exposed to tear gas and nearly everyone has medical and psychological impacts. We find that this widespread use of tear gas is disproportionate and indiscriminate and has intensely impacted the medical and psychological health of the population.

On behalf of the research team, we propose several next steps to this work. The research team intends to further develop these findings and continue research on the health impacts of crowd control weapons. We hope that UNRWA will implement practical recommendations based on this research and develop an advocacy strategy to mitigate future exposure and that the State of Israel will consider these findings and limit its use of tear gas. Specific recommendations based on these findings and conclusions are detailed in the Executive Summary.

CONTRIBUTIONS

THIS REPORT was written by Rohini Haar, MD MPH (Lecturer at the School of Public Health, and the Human Rights Center at the University of California, Berkeley School of Law, and clinical faculty at the Department of Emergency Medicine at Highland General Hospital, Oakland, California) and Jess Ghannam, PhD (Clinical Professor of Psychiatry and Global Health Sciences in the School of Medicine at the University of California, San Francisco). The findings in this report are the sole responsibility of the authors and do not necessarily reflect the views of the United Nations, including those of UNRWA. The report stems from a study commissioned by UNRWA to assess the health impact of the tear gas exposure on Palestine refugees. The report benefited from review by Art Reingold

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APPENDIX

NOTABLE FOCUS GROUP INTERVIEW REMARKS*

Healthcare worker comments

General

- “It’s not just you having the problem [with tear gas]. It’s you and your family and everyone you know.”
- “The stress is of remaining neutral despite the disrespect, the humiliation, the abuse and the history. But we do it. It is our duty and our job. It is our promise to treat all people as humans.”

Medical Ethics issues/Fear of privacy violations

- “We are not recording cases”
- “We don’t put names, or any identifiers in the medical records”
- “2 weeks ago, the IDF raided and occupied Al Makkased hospital for 48 hours. Our records are not secure.”
- “Doctors can be arrested if they do not share information”
- They (the ISF) can come inside the hospital.”
- “How do we deal with the IDF while they are firing at us? In one minute, 100 bombs (canisters) are thrown. How do we stay neutral and keep out of harm?”
- Sometimes, the ambulance is a target because people come to us and they fire at us.
- “We are held back by the IDF and not allowed to go and help”
- “People are yelling for help, while the IDF is attacking or blocking you. It’s a huge burden for us.”
- “The IDF will call us and ask where we took our patients so they can do and arrest them. This is very unethical.”

Occupational hazards

- Lack of surgical masks, gas masks
- “Sometimes need to evacuate the Emergency department because its everywhere.”
- “Sometimes, we need to use the back entrance to the hospital.”
- “It is part of our lives”
- “For people working, we are the first responders. The intensity of the gas we are exposed to makes it impossible to do anything. It effects our skill set.”
- “We are feeling like we are about to die and trying to help other people.”
- “The ISF sometimes called the ambulance service and notifies that there will be an incident.”

- Some of us wear bullet proof vests.
- “Once tear gas smell is in the ambulance, it takes three days before it goes away. We need to change the filter each time.”
- “You can’t give 100% of your service. You can’t help others when you are suffocating. Sometimes, I am paralyzed.”
- “We call it “occupational paralysis.”
- “We get frequent chest infections from our exposure.”
- “Psychologically, it makes me irritable and stressed.”

Frequency

- “We get a case every 3–4 days from Aida and Dheisheh camps.”
- “We get called every Friday, and often twice a week.”

Fear

- “A decade ago, people were rushing to the hospitals. Now, they are afraid they will get arrested if they do.”
- “We don’t see that many cases because people are afraid to come to the hospital”
- Children are not going to school because they are throwing it in schools

Medical impacts of the chemical

- “We feel like this tear gas is different than it used to be years ago. Now, it triggers neurological effects like spasms and confusion.”
- “I don’t think this is tear gas”
- see burns, chronic fibrosis in the lungs
- concern in Aida camp that miscarriages have been triggered by high exposure to tear gas
- Seeing cases of burning in the lungs—we sent him to a pulmonologist in Israel but not sure what happened.
- “We had a burn case last week and sent him to [Name withheld] hospital. We heard that he is doing well but we don’t keep records.”
- “We’ve seen an increased number of premature babies and miscarriages in the refugee camps and small villages that have more tear gas.”
- Two years ago, there was a case of a two-week-old infant with severe bronchoconstriction secondary to tear gas. He required a three-day admission.
- We see increased asthma and chronic respiratory conditions in small babies and kids younger than two when they are exposed to tear gas so much.
- In Khalil (Hebron), mothers won’t send their children to school because they will get chronic lung diseases.”
- We should know exactly what you (ISF) are doing. But the side effects are different now. That’s why there are rumors. And we can’t prove it.”

Concern about chemical composition

- “The old tear gas would be better with some water but that only makes it worse. Obviously, it’s a different chemical.”

- “We are sure this is not simple tear gas. In the 1st and 2nd intifadas, onions and oxygen worked. Now, oxygen is not enough. We have intubated a few cases and there is no other direct treatment.”
- “It’s not just ‘tear’ gas- its suffocating and very dangerous.”
- “What is all this causes cancer? What is the long-term effects of this much tear gas?”

Possible treatment

- “We treat symptomatically. I don’t know about any antidotes”
- Intubation
- Prophylactic antibiotic
- Anxiolytics such as Xanax and lorazepam
- “We take patients to a place with better ventilation.”

Other weapons

- “In Dheisheh camp, we saw at many cases of the IDF targeting the knee with ‘2-2’ or ‘dumdum’ bullets. They explode inside and cause permanent disability.”
- Skunk water with tear gas causes severe hypoventilation.
- “The skunk lasts weeks.”
- One week ago, a 16-year-old died of live ammunition. It feels like they aim to hit for permanent disability. This is calculated and strategic.”

Development of an Exposure Protocol

- “When tear gas is sprayed outside, we don’t have a formal plan but we close all the windows, tell the manager, shut off all the ventilation and wait as long as there is tear gas outside.”

UNRWA teachers

- “I am scared for myself and for my students.”
- “I don’t know how to make sure the students concentrate when their eyes are burning.”
- “After an incident completely disrupts the class, it is difficult to find our place and keep going.”
- “It’s not just once in a while, its constant. It is disrupting our education.”
- “The wall is across the street from the school. We are the front line.”
- “Children should not be exposed like this. They are just trying to learn.”
- “Children [soldiers] are shooting at children. What sort of world is this? It is not a game.”
- “I can’t teach when I can’t breathe.”

Camp Security Guards

Exposure and Frequency

- “We got tear gas every day to every 2 weeks, starting at 2am to 7am at the school. No one was there. Why did they attack?”
- At 2am, 6am, 7am. Sometimes when the kids are at school but no one was doing anything.”
- “The school in the camp is on the main road”
- “During the morning, they (IDF) intentionally has the school. And they do the girls school too. They want the stone throwers to feel bad that the girls are getting hit.”
- “The school is like a cloud and everyone feels suffocated.”

- “It’s constant. Since Ramadan, its every day.”
- “My symptoms do not go away before getting hit again.”

Health effects

- “It totally affects me. I close the door and window and sit there.”
- “Psychologically, this is very dangerous and causing a lot of suffering.”
- “it bothers my nerves for days. I have tingling and nerve pain and feels like something is walking on my nerves, like numbness.”
- “Each time, I have 3–4 days of intense headaches and burning around the eyes.”

Occupational hazards and impacts

- “Sometimes, I try to help but three hundred bombs come. I can’t close all the windows at the school.”
- “We always have an onion, but it doesn’t help.”
- “We boil peppermint and parsley but it doesn’t help.”
- “We have nothing to defend ourselves. No one to call. And if I move, then I can be in danger of getting shot.”
- “We try to help the kids but it’s impossible.”
- “The school doesn’t have good ventilation so it lasts for 3 days.”
- “I am all by myself. I can die and no one will know. There should be two guards at all times.”
- “No gloves or masks. We don’t have anything.”
- “UNRWA needs to protect people. Not just the building but the people. We need a telephone, clothes, a radio, and someone to call. We need two people awake and around.”

About the children

- “And the next day, they (children) can’t sit in classrooms so they study outside.”

Sanitation Workers

Exposure and Frequency

- “Some live in the camp, some don’t but we all suffer.”
- “Daily exposure not just to pollution but also the active and after effects (of tear gas).”
- “It’s a killer.”
- “We can’t tell you how long it stays. Sometimes, you can just pick an old one up days later to throw it away and you feel it all over again.”
- “In Aida, we see 10-15 every day, and more like 60-70 during clashes.”
- “It happens while we are working.”
- “There are all different types of canisters and gas, but they are all toxic. It just kills you.”
- “It is deadly, unnatural, and potent.”

Occupational Issues

- “There is no protocol for what to do with the canisters.”
- “The gas and canisters are everywhere. We are not specialized to clean the entire camp each day.”
- There are two gas masks but they are limited and not there when we need them.”

- “Surgical masks don’t help.”
- “We need more canvas gloves.”
- “The army sees the vest but doesn’t stop shooting. We need masks.”
- “They (IDF) shoot, then wait 30-60 minutes, then come back. We are confused. We don’t know what to do.”
- “Sometimes, it lasts 10 days, we see the white powder.”
- “I can feel the burning on the face when I’m sleeping. I feel like fainting, vomiting, and suffocating.”

Possible actions

- “We want medical evaluations for all employees to see how this is affecting us. Include vaccinations, tetanus, and other treatments.”
- “We want good gloves, real masks, chemical hazard protective gear.”
- “We want a safe space we can go to.”
- “We are just cleaning it up. We would like to know what is the right thing to do.”

Elderly (ages 70–91 years old, men and women)

- “We all suffer a lot when they enter the camp by force.”
- “It’s poison. It affects us now and I’m sure it has affected our health in the future.”
- “They scare our children. What do they get from tear gassing children and old people?”
- “Last year, it was different. This year, it feels stronger and affects me more.”
- “It wakes me up at night at 2am or 3am. Why do they tear gas an old woman?”
- “During the day, there is no specific time. Sometimes, it feels like they do it just for fun.”
- “When there is tear gas, I can’t open my eyes so I can’t even get away.”
- “Once, they shot at my kids’ [grandkid’s] birthday party. We even left the cake and ran away.”
- “They don’t care if its children or old people. They don’t care if we get injured or die.”
- “There is no chance for young people here to have a life like this.”
- “it is difficult to talk about even. It gives me a headache.”
- “It (the tear gas) will not stop unless there is peace.”
- “Two days ago, we had it (tear gas exposure). It’s on a daily basis here. I went to the hospital twice to get oxygen.”
- “It’s stays two or three days when it gets inside the house.”
- “Sometimes, they malfunction. The children play with them and the canister explodes on them.”
- Complaints of impacts to the eyes “I need glasses now.”, breathing (“I can’t breathe for days afterwards”); and allergic reactions (rashes).

Children (ages 12–14)

Exposure

- “We see tear gas, skunk water, and 200 grenades in a couple minutes.”
- “There are many night raids. If they fire at 2 or 3am, it stays until 11am. Sometimes they postpone class.”
- “The powder is outside but the smell is inside.”
- “Little kids will touch and play with it (the canister). Teachers will tell them to clean up but its already too late.”
- “You try to pay attention but you were suffering from the gas and you missed some of the lesson.”

- “I try to sleep before the expected raids at 2 or 3 am but I know they will wake me up.”
- “We use Facebook page to know what happened the night before or what to expect. They don’t tell us.”
- “Watching my friends bleed and get arrested is hard. Later, I tried to comfort him but they left him there for an hour.”
- Two youth were injured in a clash. One got injured in the head. They went to the hospital but the hospital said it can’t help because they don’t want to get in trouble, so they had to drive to another hospital.”
- “They use sound bombs, sunk and blood hound dogs together to scare everyone.”
- “They block ambulances.”
- “At night, they take the young men and blindfold them. It’s not right.”

Health impacts

- “What happens? My face burns, I feel dizzy. It’s hard to breathe. I sneeze. My throat burns. I can’t open my eyes. Sometimes I faint.”
- “I can’t study, I can’t concentrate because we are thinking of the smell of the gas. Kids in class have water and tissues on their face. “
- “I have allergies so I don’t use onions. Water makes it worse. Then it burns like hell.
- “I feel stomach pains and diarrhea.”
- “I feel terror like I may die.”
- “I get easily startled.”

Teenage Students (ages 14–16, male and female)

Exposure

- “They enter from everywhere.”
- “Even babies get tear gas here.”
- “You cannot easily target it. It is everywhere.”
- “We don’t feel safe in our homes. We don’t feel safe anywhere.”
- “It’s a tool to catch someone in the camp because then you can’t escape or see anything. It has nothing to do with protests.”
- “Four days ago, there was tear gas in my house. It’s unpredictable. It happens regularly and there isn’t any way to stop it.”
- “They use tear gas so they can get in and out faster, get inside our houses and take people.”
- “We have adapted, but this is not normal. This shouldn’t be how children live.”
- “I’m up all night with the gas, so I’m exhausted at school.”

Health impacts

- “I can’t open my eyes. I can’t breathe.”
- “Nothing makes it better. We don’t know what to do.”
- “I smelled it when I was sleeping. It woke me up. We went and closed all the windows. Then it was burning and my eyes burned. We waited to them (IDF) to leave the camp but then I couldn’t sleep anymore. I rushed to everyone’s room to makes sure everyone is safe.”
- “Of course it makes you scared. It makes you hate the oppressor more.”

- “I feel angry and sad and upset that there is nothing you can do.”
- “I saw fear in every child’s eyes and I was scared too.”
- “I don’t know but I worry that this will give me health problems in the long term.”
- “After my friend was killed, I went to his house and felt I was about to pass out.”

General Community Groups

- “UNRWA has a duty to protect us.”
- “They call it tear gas. I call it ‘that which takes out the soul.’”
- “Nothing helps, nothing makes it better.”
- “We live in terror. I wait for them at night so I can’t sleep.”
- “Tear gas is affecting all our people. Not all in the same way but everyone here is affected.”
- “This is not tear gas, it is a toxic chemical.”
- “They don’t use it as a defensive weapon. It’s an offensive weapon.”
- “It’s a crime when so many grenades are thrown so quickly at unarmed people.”
- “When there are night raids, where is there to go for help?”

*English translations provided by interpreters during time of interview.



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