
بسم الله الرحمن الرحیم
والعصر
ان الانسان لفی خسر
الا الذین آمنوا و عملوا الصالحات و تواصوا بالحق و تواصوا بالصبر

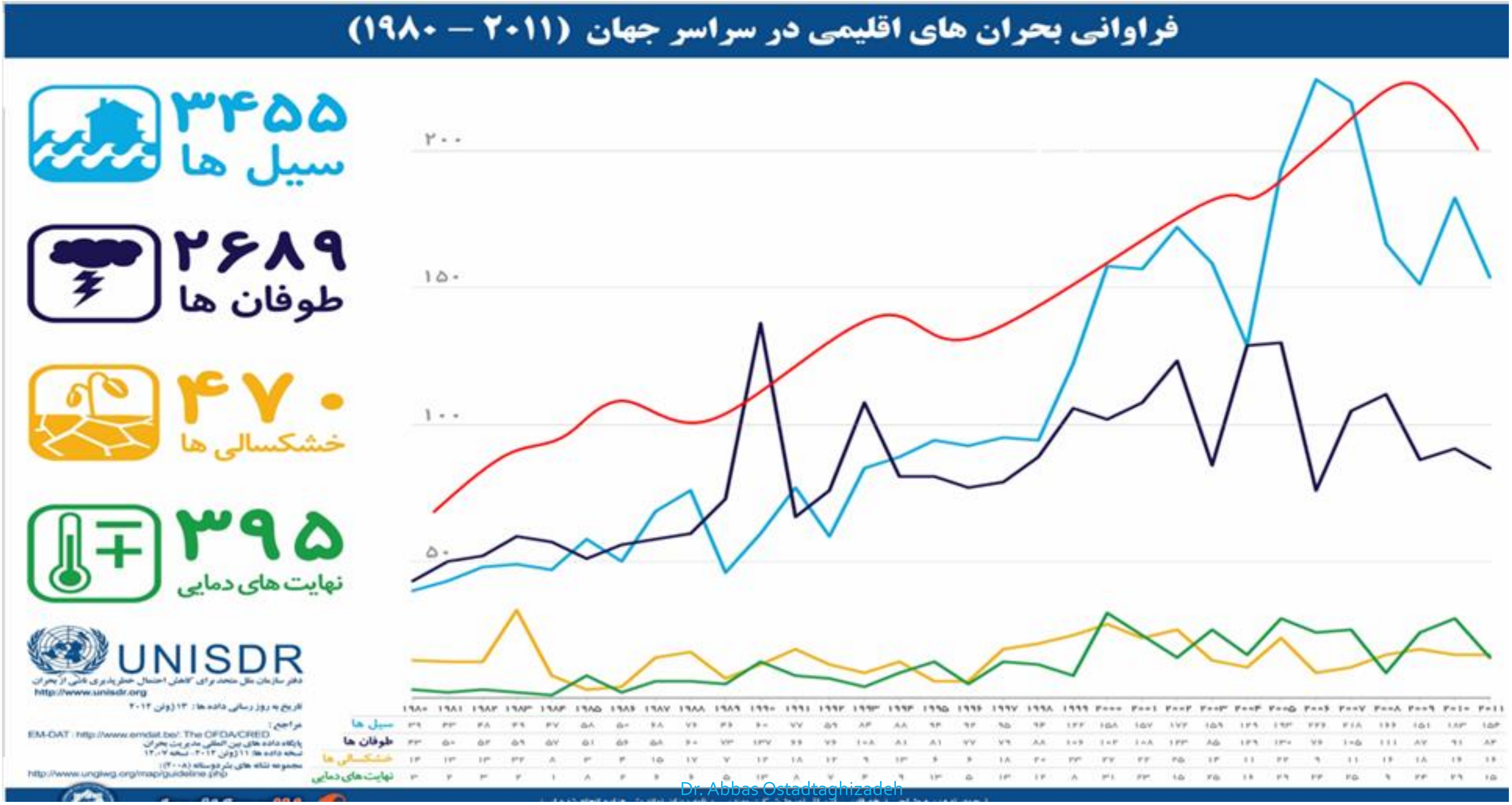
پیشگیری از موارد غرق شدگی در حوادث طبیعی

دکتر عباس استاد تقی زاده
دکترای تخصصی سلامت در بلایا و حوادث،
دانشیار دانشگاه علوم پزشکی تهران

نگاهی به وضعیت سیل در جهان

سیل در آینه گزارش های جهانی

- سیل ها شایع ترین حادثه طبیعی در دنیا می باشند.
- دارای بیشتری خسارت در بین حوادث طبیعی
- یک سوم کل خسارتهای ناشی از حوادث طبیعی
- ۴۲ درصد کل حوادث طبیعی بین ۱۹۹۶ تا ۲۰۰۵ میلادی.
- ۹۰ هزار نفر کشته در بین سالهای ۱۹۹۶ تا ۲۰۰۵ میلادی
- بیشترین میزان مرگها را در میان حوادث طبیعی می آفرینند.
- ۱.۳ میلیلرد نفر تحت تاثیر
- در بین سال های ۱۹۸۰ تا ۲۰۰۰ بیش از ۱۷۰ هزار نفر به دلیل وقوع سیل جان باختهاند.


فراوانی بحران های اقلیمی در سراسر جهان (۲۰۱۱ — ۱۹۸۰)
۳۴۵۵
سیل ها
۲۶۸۹
طوفان ها
۴۷۰
خشکسالی ها
۳۹۵
نهایت های دمایی
UNISDR
http://www.unisdr.org
۲۰۰
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۵۰
سیل ها
طوفان ها
خشکسالی ها
نهایت های دمایی

مهمترین اثرات مستقیم سیل بر سلامت

- ۱ – مرگ انسانها
- ۲ – جراحت
- ۳ – شیوع بیماری های واگیر
- ۴ – مشکلات بهداشت محیط
- ۵ – اختلالات روانی – اجتماعی
- ۶ – تخریب زیرساخت های نظام سلامت
- ۷ – مشکلات تغذیه ای
- ۸ – جابجایی جمعیت
- ۹ – آلودگی منابع آب آشامیدنی
- ۱۰ – افزایش جمعیت ناقلین

- Loss of Safe Water and Adequate Sanitation

Food Insecurity: Crop Losses and Disruption of Food Distribution

- Generalized food shortages enough to cause nutritional problems usually do not occur after disasters but may arise among low-income nations in two ways:

1. Food stock destruction within the disaster area may reduce the absolute amount of food available.
2. disruption of distribution systems may curtail access to food, even if there is no absolute shortage.

Loss of Shelter and Population Displacement

- Displacement is a key risk factor for morbidity and mortality among disaster-affected populations.
- Misdirected or misguided settlement solutions may increase and prolong the risk of morbidity and mortality among displaced populations by providing shelter below internationally accepted standards for space, nutrition, food, clean water, safety and security, sanitation, hygiene, and access to medical care.

TOXIC CHEMICAL EXPOSURES

- The mobilization of chemicals either from storage (e.g., underground fuel tanks, pipelines, hazardous landfill sites, and wastewater lagoons) or by remobilization of chemicals already in the environment (e.g., pesticides, dioxin in river/canal sediment, runoff from roads and bridges, overloaded sewers, and acid mine drainage) has occurred during floods.
- These chemical hazards are more likely to mobilize when industrial and agricultural areas are submerged underwater.

TOXIC MOLD EXPOSURES

- Visible mold growth was found in 46% of homes inspected after flooding caused by Hurricane Katrina.
- Predominant fungi indoors and outdoors were Aspergillus and Penicillium species.

DISRUPTION OF HEALTH CARE SERVICES

- Flooding may directly damage healthcare facilities or it may hinder public access to these facilities by closing transportation routes.
- The primary effect often results from disruption of usual transport routes due to water. Modifications were made for alternative methods of infection control, sterilization, housekeeping, and food preparation.
- Planners implemented extraordinary measures to maintain adequate amounts of water for laundry, fire protection, cooling, instrument sterilization, renal dialysis, physical therapy, and dietary services.
- Poweroutages are a common impact of flood disasters.

Flood-related Mortality

- The number of deaths associated with flooding is closely related to:

1. the life-threatening characteristics of the flood (rapidly rising water, deep flood waters, objects carried by the rapidly flowing water)
2. by the behavior of the victims.

- Information on risk factors for flood-related death remains limited, but men appear more at risk than women.

Flood-related Mortality

- In high-income countries most deaths are due to drowning and, particularly in the U.S., are vehicle-related.
- The most likely group to drown in their own homes are the elderly.
- In general, high mortality rates are frequently observed in flash flood incidents, The majority of flood-related drownings occur when a vehicle is driven into hazardous floodwaters.
- The power of water, especially moving water, is astounding. For example, 60 cm of water moving at 16km/h will float virtually every car."

Flood-related Mortality

- Prior to the implementation of early warning, evacuation, and shelter systems, drowning from hurricane storm surge accounted for an estimated 90% of cyclone-attributable mortality in both high-income and low-income nations.
- Storm surge drowning deaths have decreased markedly in high-income nations due to improvements in population protection measures.
- One notable exception is that more than 1300 deaths were attributed to Hurricane Katrina, most of which occurred as result of flash flooding caused by catastrophic levee failures, making 2005 the third deadliest year in U.S. history for flood deaths to that date.

Flood-related Morbidity

- ❑ POVERTY AND FLOOD-RELATED MORBIDITY
- ❑ COMMUNICABLE DISEASES AND FLOOD-RELATED MORBIDITY
- ❑ DIARRHEAL ILLNESS
- ❑ RESPIRATORY INFECTIONS
- ❑ VECTOR-BORNE DISEASES
- ❑ ARTHROPOD-BORNE DISEASES
- ❑ Rodent-borne Diseases
- ❑ DERMATOLOGICAL CONDITIONS
- ❑ WOUND INFECTIONS
- ❑ INJURIES
- ❑ MENTAL HEALTH EFFECTS
- ❑ Anxiety and Depression
- ❑ Suicides
- ❑ Posttraumatic Stress Disorder
- ❑ EXACERBATION OF CHRONIC ILLNESS
- ❑ CARBON MONOXIDE POISONING

POVERTY AND FLOOD-RELATED MORBIDITY

- Poverty is a key risk factor for human vulnerability to flood disasters.
- Low-income populations often dwell in locations at higher risk for flooding and have fewer resources available for response and recovery
- low-income nations have a higher incidence of food-related outbreaks of infectious diseases, such as leptospirosis, typhoid, malaria, and cholera.
- High-income nations tend to suffer few flood-related outbreaks, but instead have a higher proportion of flood-related non-communicable diseases, such as injuries, mental illness, cardiovascular disease, and chronic obstructive pulmonary disease.

COMMUNICABLE DISEASES AND FLOOD-RELATED MORBIDITY

- The risk of infectious diseases after flood-related disasters is often specific to the event itself and is dependent on a number of factors.
- The risk factors for the outbreak after disasters are primarily associated with displacement of highly vulnerable populations.

Specific risks to these populations are determined by:

1. the proximity of safe drinking water
2. functioning latrines
3. nutritional status of the displaced population
4. level of immunity to vaccine-preventable diseases
5. access to healthcare services.

DIARRHEAL ILLNESS

- The risk of diarrheal illness appears to be less for high-income countries compared with low-income countries.
- Diarrheal illness in high-incomes countries most commonly manifests as a self-limiting gastroenteritis without a specifically identified pathogen.
- in Low-income Nations Surveillance data showed Cholera was the most common cause of admission, and entero toxigenic Escherichia coli was also an important cause of acute watery diarrhea, particularly in children younger than 2 years of age.

RESPIRATORY INFECTIONS

- This lack of hygiene can lead not only to diarrheal illness but also to acute respiratory infections.
- Flooding may also result in episodes of near-drowning and pulmonary aspiration of floodwater.

ARTHROPOD-BORNE DISEASES

- Floods are often followed by a proliferation of mosquitoes.
- surveillance programs are useful to prevent the unnecessary application of insecticides implemented during prophylactic mosquito control.
- Malaria outbreaks in the wake of flooding have been reported in several very low-income nations with warm climates.
- Dengue transmission is influenced by meteorological conditions; however, the transmission has not been directly attributable to flooding.

Rodent-borne Diseases

- Diseases transmitted by rodents may also increase during heavy rainfall and flooding because of altered contact patterns.
- Humans usually acquire leptospirosis after exposure to fresh water contaminated with the urine of infected animals, such as rats.

DERMATOLOGICAL CONDITIONS

- Dermatological conditions, usually in the form of nonspecific rashes, are a commonly reported complaint during the flood.
- Wound infections are common after disasters.
- There is no evidence indicating that the risk of tetanus is increased in flood-related lacerations; therefore standard immunization practices should be used.
- During a flood disaster, injuries are more likely to occur as residents attempt to travel or evacuate through flooded areas and in the aftermath of a flood disaster when residents and workers return to dwellings to clean up damage and debris.
- Lacerations and punctures are common during post-flood cleanup and recovery activities.

INJURIES

- Hypothermia with or without submersion injury is seen in some flood casualties.
- Electrocutions have occurred as a result of downed power lines, electrical wiring, and improper handling of wet appliances.
- Injuries from fires and explosions from gas leaks also occur.
- Carbon monoxide poisonings occur, usually in association with loss of electrical power.
- Musculoskeletal and soft tissue injuries are frequent conditions associated with floods.
- Although it is a recurrent public concern that animals such as snakes may be forced to seek refuge from rising floodwaters in areas that may be inhabited by humans, public health surveillance after floods have not indicated that wild animal bites have been a major problem.

Factors that appear to make people more vulnerable to the development of psychological problems include:

1. the following Objective and subjective characteristics of the disaster–proximity of the victim to the disaster site
2. the duration of the disaster
3. the degree of physical injury
4. the witnessing of death or injury
5. Characteristics of the post-disaster response and recovery
6. environment–community cohesion
7. secondary victimization
8. disruption of social support systems
9. lack of home-ownership
10. duration of displacement from home

MENTAL HEALTH EFFECTS

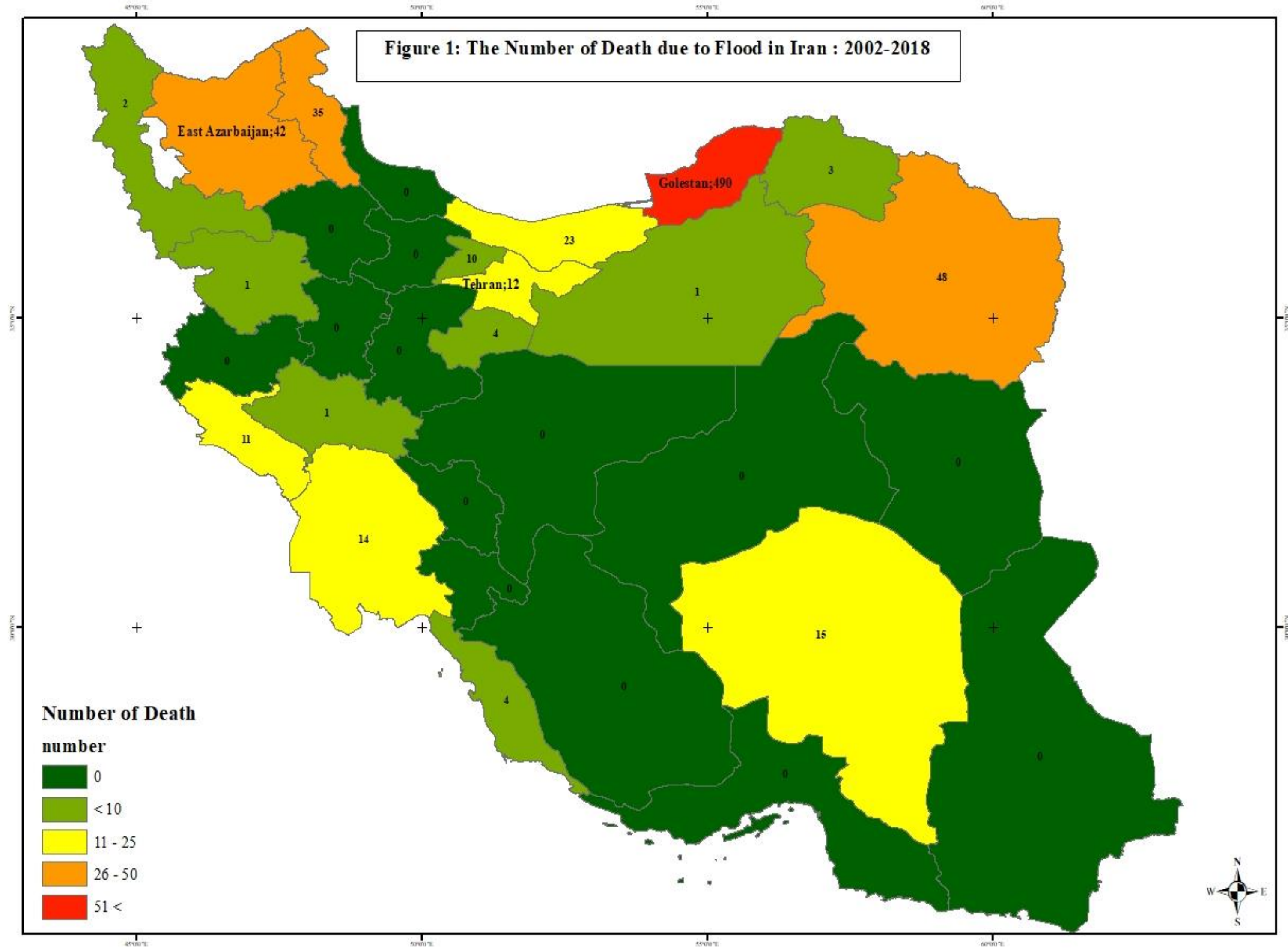
Characteristics of the individual or group:

1. history of psychological problems
2. elderly
3. unemployed
4. single parent
5. children separated from their families.

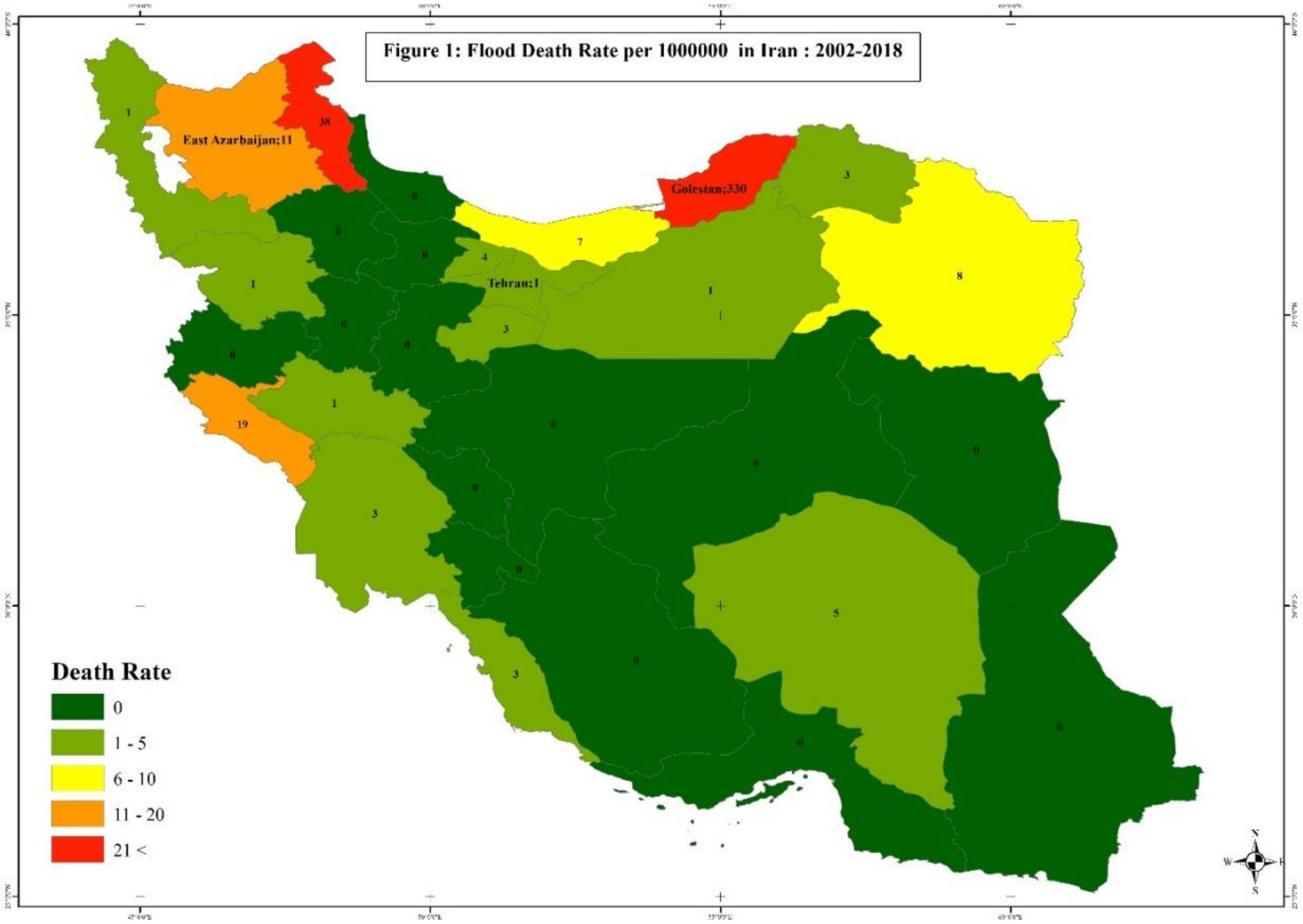
- **Anxiety and Depression:** There is considerable evidence for the impacts of anxiety and depression among flood-affected populations.
- **Posttraumatic Stress Disorder**
- **Suicides:** Evidence is limited regarding flood-related suicides. One study in a high-income nation indicated that suicide rates increased by 13.8% above the predisaster rates.

نگاهی به وضعیت سیل در ایران

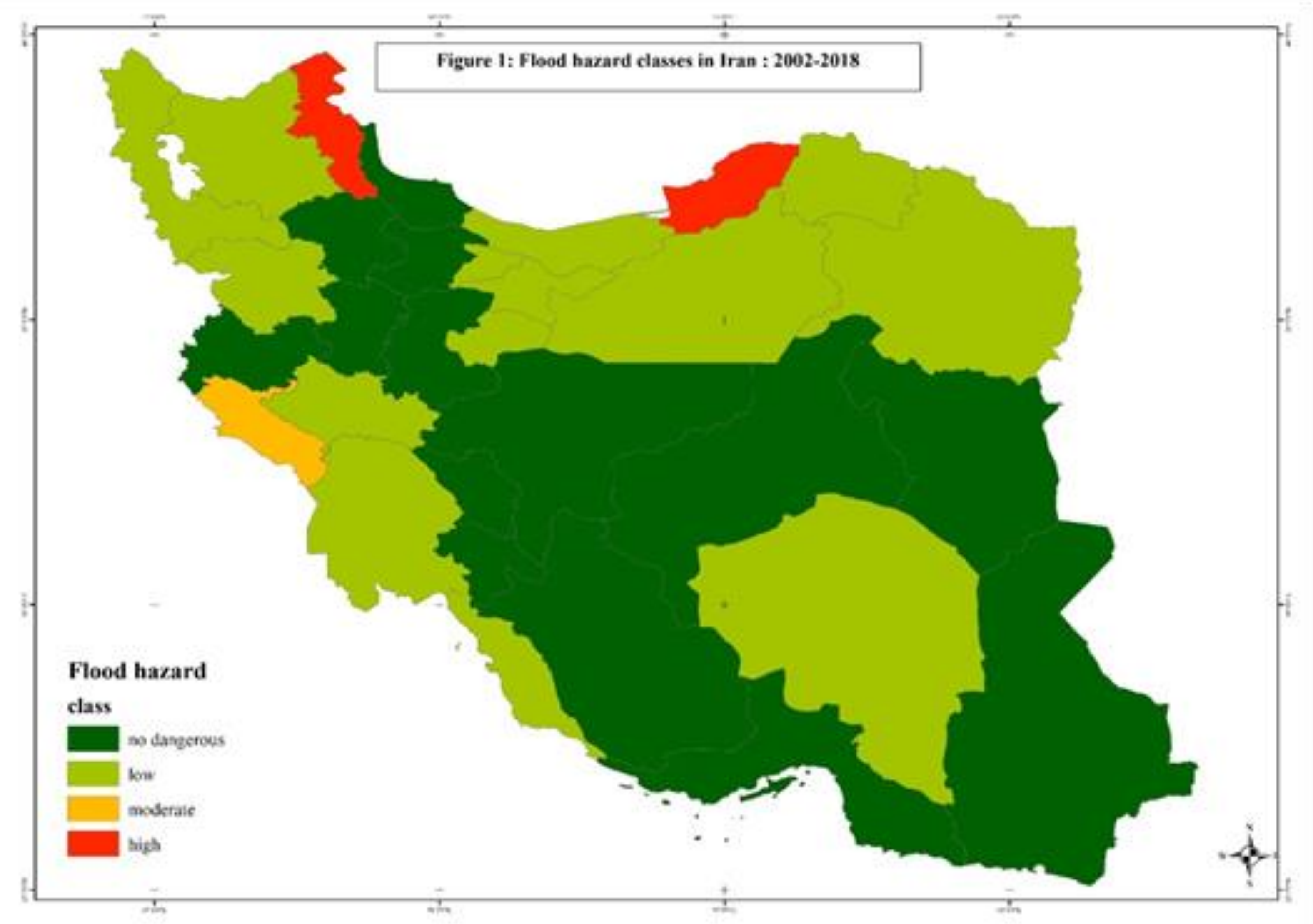
نقشه مرگ های خام ناشی از سیل در ایران به تفکیک استان



نقشه میزان مرگ های ناشی از سیل در ایران به تفکیک استان



طبقه بندی خطر مرگ های ناشی از سیل در ایران به تفکیک استان بر اساس تعداد مرگ



آسیب‌های ناشی از سیل بهار ۹۸ به نظام سلامت

ردیف	نام استان	جمعیت تحت تأثیر / نفر	جمعیت نیازمند خدمات سلامت / نفر
۱	گلستان	۱۱۸۴۶۷۲ نفر	۳۰۰۰۰۰
۲	لرستان	۱۷۶۰۶۴۹ نفر	۳۴۵۹۸۹
۳	ایلام	۵۶۴۵۴۴	۱۰۹۳۳۸
۴	خوزستان	۳۷۶۴۷۴۰	۹۸۲۹۳
جمع		**۷،۲۷۴،۶۰۵**	**۸۵۳،۶۲۰**

تعداد مصدومین و فوتی های سیلاب ۹۸–۹۷

ردیف	نام استان	کل مصدومین	کل فوتی
۱	فارس	۱۹۰	۲۴
۲	گلستان	۷۷	۸
۳	مازندران	۴۹	۶
۴	خراسان رضوی	۲۱	۱
۵	کرمان	۲۰	۰
۶	خراسان شمالی	۰	۳
۷	یزد	۶	۰
۸	سمنان	۲	۱
۹	سیستان و بلوچستان	۸	۰
۱۰	تهران	۲	۰
۱۱	کهگیلویه و بویراحمد	۱	۳
۱۲	لرستان	۷۵۱	۱۶
۱۳	همدان	۴	۸
۱۴	خوزستان	۱۰۱۳	۵
۱۵	کرمانشاه	۳	۴
۱۶	زنجان	۰	۲
۱۷	قزوین	۳	۱
۱۸	اصفهان	۱۱	۱
۱۹	قم	۰	۱
۲۰	البرز	۲	۰
۲۱	ایلام	۳۰	۱
	جمع کل	۲۱۹۳	۸۵

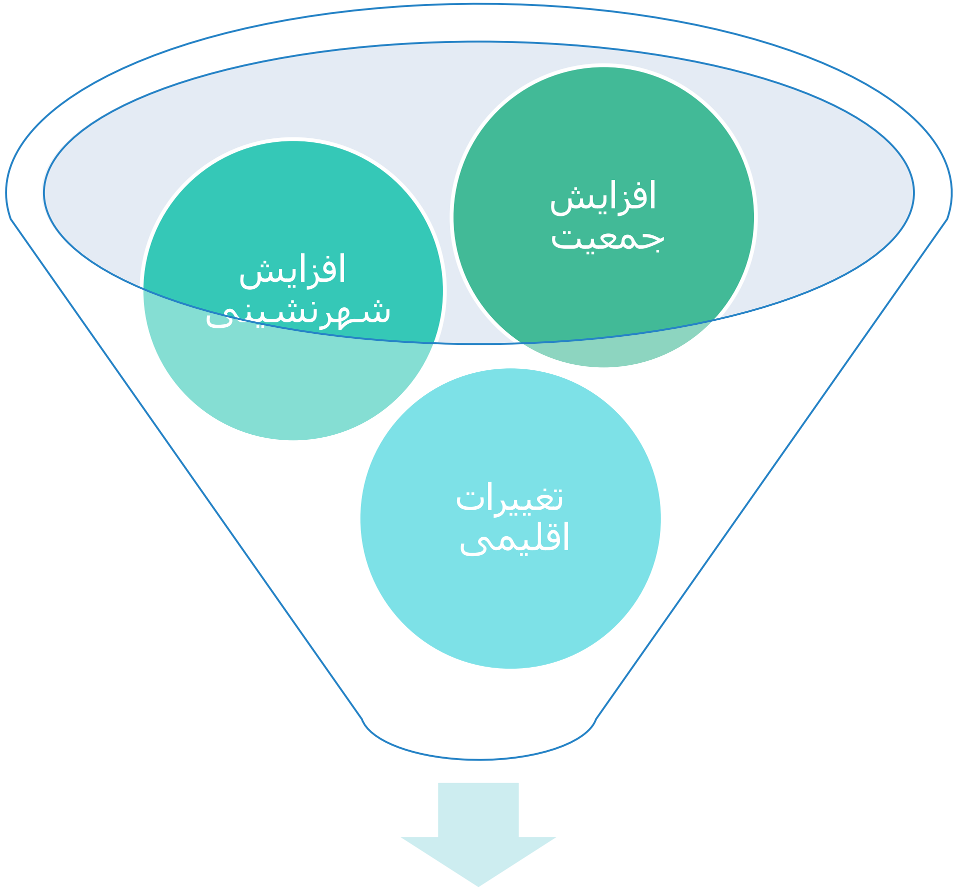
خسارت های وارده به زیرساخت های سلامت

ردیف	نام استان	تعداد بیمارستان	تعداد خانه بهداشت	تعداد مراکز بهداشت	تعداد پایگاه سلامت	تعداد پایگاه ۱۱۵	سایر مراکز	میزان برآورد خسارت(میلیون ریال)
۱	مازندران	۷	۲۷	۱۵	۱	۳	۵	۱۰۱۴۰۰
۲	گلستان	۱۶	۱۸۸	۶۴	۱۳	۱۶	۲۶	۲۹۳۲۵۰
۳	خوزستان	۰	۱۸	۱۹	۳	۳	۱	۲۵۷۰۰۰
۴	لرستان	۱۴	۲۱۱	۸۵	۲۱	۱۷	۱۱	۱۴۵۲۷۰۰
۵	فارس	۲۷	۲۱	۱۲	۰	۱	۶	۱۰۲۳۲۰
۶	ایلام	۱	۵۰	۱۴	۰	۳	۵	۶۰۸۵۰
۷	سمنان	۰	۱	۱	۰	۰	۱	۳۰۰۰۰
جمع		۶۵	۵۱۶	۲۱۰	۳۸	۴۳	۵۵	۲۲۹۷۵۲۰

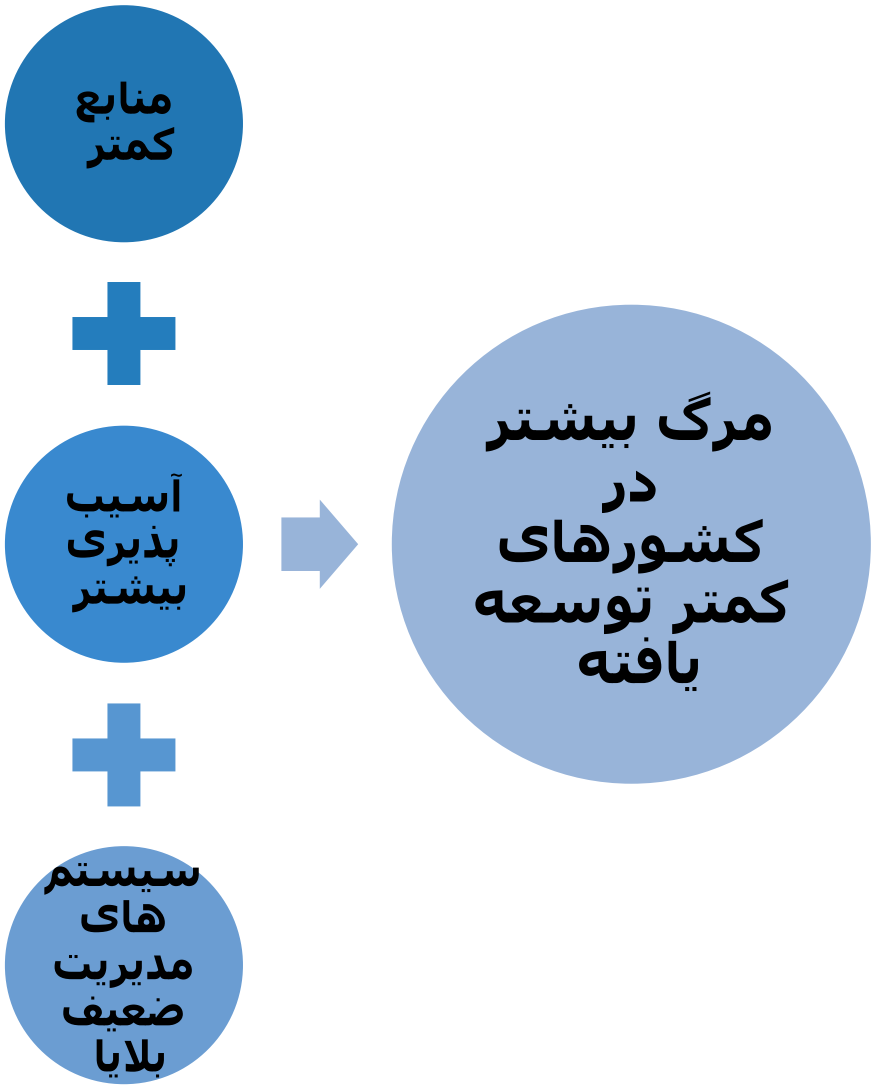

وزارت بهداشت د مان و اموزش پزشکی
دانشگاه علوم پزشکی و خدمات بهداشتی درمانی استان لرستان ـ معاونت آموزشی
دانشکده پرستاری و مرکز آموزشی فوریتهای پزشکی شهرستان پلدختر
SHOT ON MI 5X
MI DUAL CAMERA


SHOT ON MI 5X
MI DUAL CAMERA

مرگ ناشی از سیل در آینه مرور متون



افزایش مرگ های ناشی از سیل


منابع کمتر
+
آسیب پذیری بیشتر
+
سیستم های مدیریت ضعیف بلایا
مرگ بیشتر در کشورهای کمتر توسعه یافته

عوامل خطر مرگ ناشی از سیل

- ۱۱۴ عامل خطر در ۵ دسته :
- ویژگی های مخاطره
- عوامل آسیب پذیری فردی
- عوامل آسیب پذیری محیطی
- عوامل آسیب پذیری اقتصادی – اجتماعی
- عوامل مدیریتی یا ظرفیت ها

Variable	Sub category
Hazard Characteristics	Intensity and extent of flood
	Depth flood
	Flood type
	Duration of the flood
	Flood time
	Flood velocity
	Rain type
	Debris in the flood
	water temperature

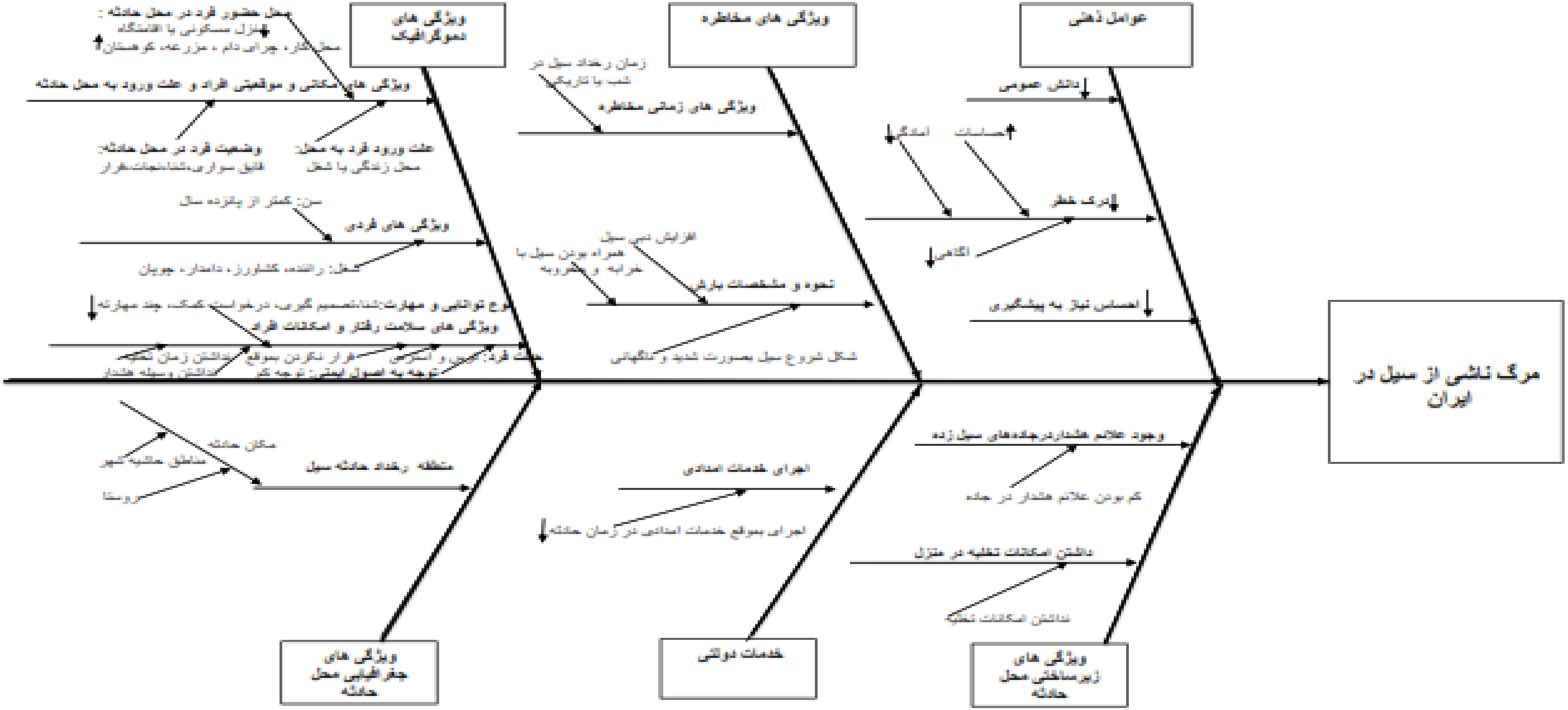
Domain	Sub category
Individual Vu lnerability Factors	Age
	Job
	Gender
	Education
	people reaction and behavior
	Risk perception
	Disability
	Individual situation
	Crossing type
	Having skill and experience
	Other

Variable	Sub category
Environmental Vulnerability Factors	**Population**
	Incident location
	Residency area
	hydrological conditions
	topographical characteristics
	Climate and weather
	other

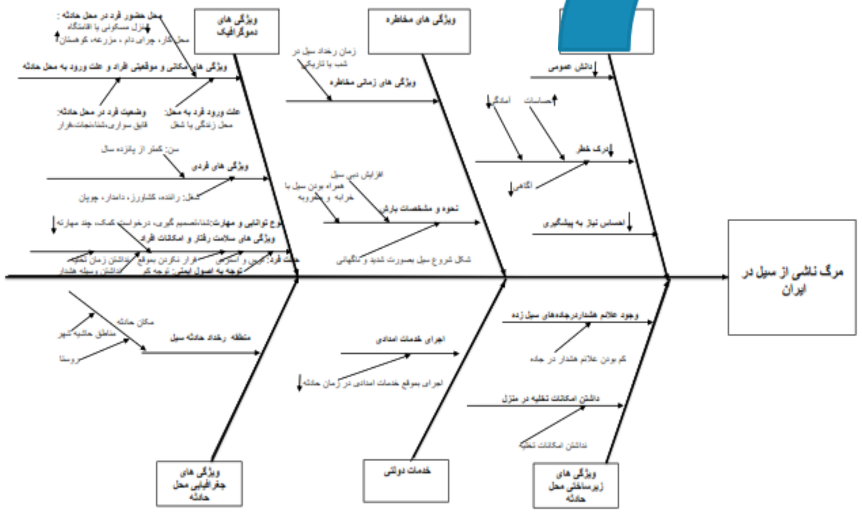
Variable	Sub category	
Socio-economic Vulnerability Factors	**Development**	
	Social vulnerability	

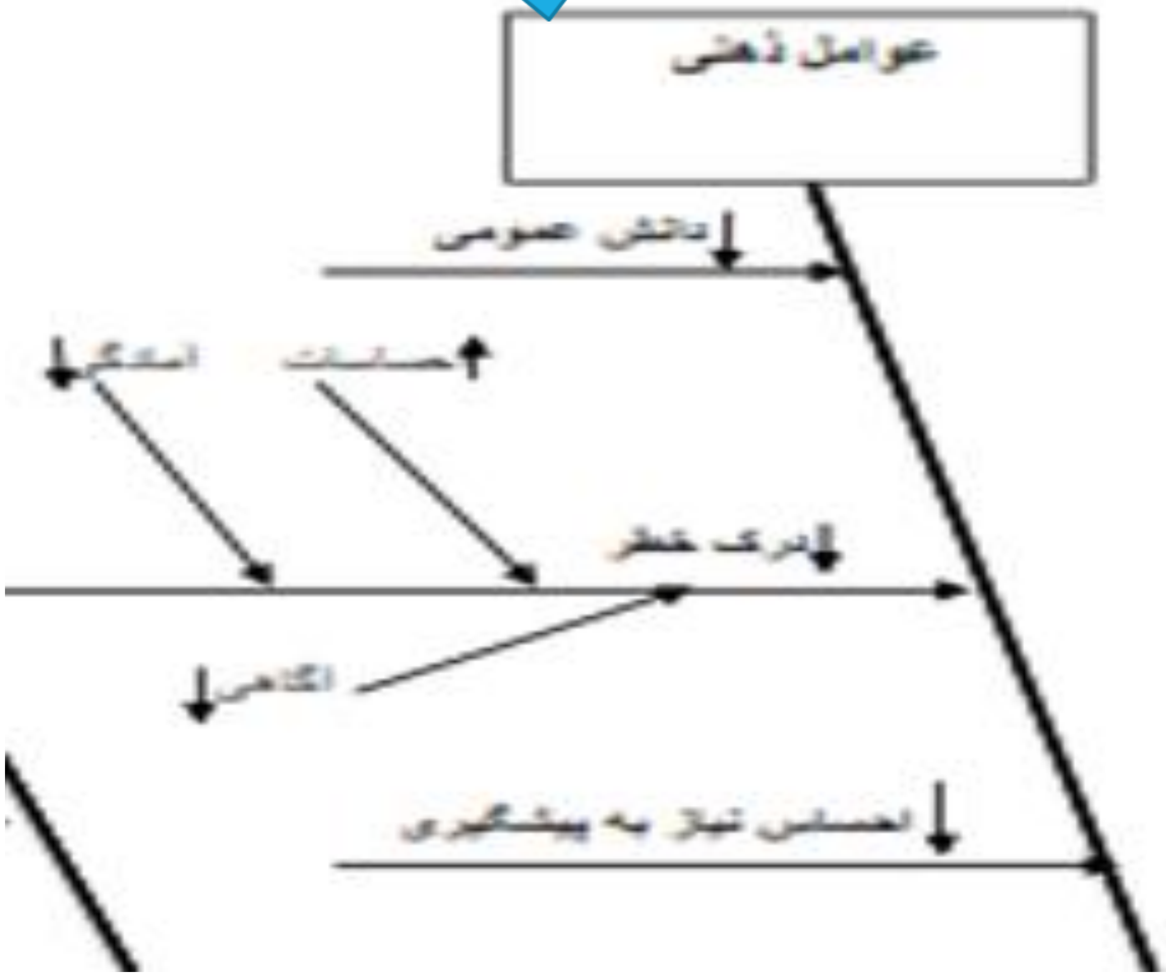
Variable	Sub category	
Managerial Vulnerability Factors or Capacities	Managerial	
	Structural	
	preparedness	
	Response and Relief	
	Prevention	

شبکه علیتی مرگ های ناشی از سیل

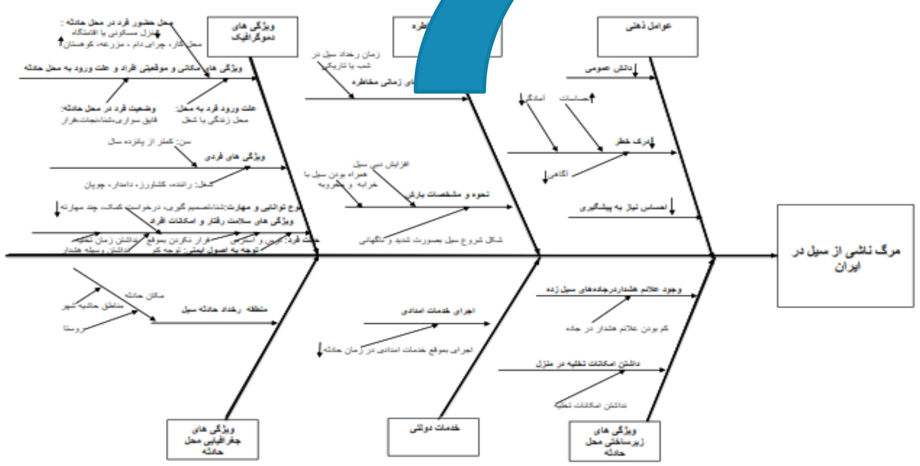


عوامل ذهنی مرگ ناشی از سیل

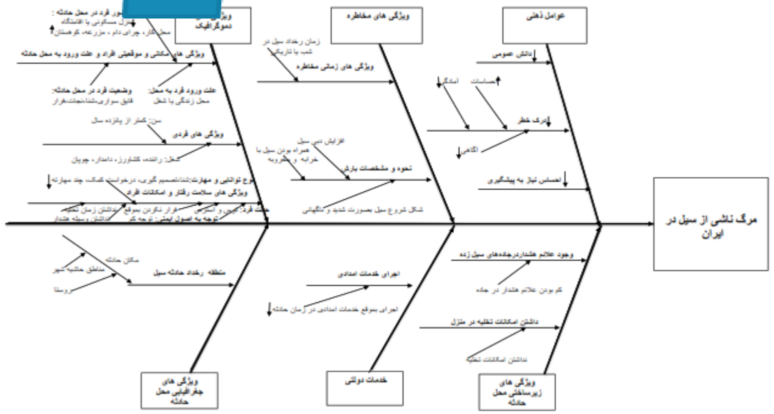




ویژگی های مخاطره موثر در مرگ های ناشی از سیل



ویژگی های دموگرافیک ی ناشی از سیل



مدیریت پیامدهای بهداشتی در سیل ها

۱ – اقدامات پیشگیری

- Warning has been identified to be a substantial factor in decreasing mortality from flash floods by more than 50%.

- Health communication is a valuable tool in educating the public before and after flood impact regarding protective behaviors that help to prevent drowning (i.e., cautions regarding driving vehicles in flooded areas).

- Other injuries and illness may also be prevented through public awareness and education that promotes safe and healthy activities during flood response and recovery efforts.

۲ – اقدامات کاهش اثرات

- Flood-related mitigation activities lessen deaths and injuries by:

1. ensuring structural safety through enforcing adequate building codes
2. promulgating legislation to relocate structures away from flood prone areas
3. planning appropriate land use
4. managing coasts and floodplains.

- Shelter and settlement solutions for displaced populations must adequately address basic human needs related to space, water, sanitation, hygiene, nutrition, and security to mitigate the public health impact of floods.

۳ – اقدامات آمادگی

Eleven “Es” of emergency preparedness have been described

1. Evaluation and forecasting of hazard
2. Early warning
3. Evacuation
4. Emergency operations planning
5. Education and awareness
6. Exercises and drills
7. e-Health and electronic media
8. Epidemiology
9. Equipment and supplies
10. Enforcement of landuse regulations and zoning codes
11. Economic incentive

۴ – اقدامات مقابله با سیل

❑ Community Needs Assessment:

- Immediately after the flood impact phase, responder teams conduct rapid needs assessments to identify gaps between health and medical needs of a flood affected community and available resources.

- A needs assessment typically consists of administering a standardized questionnaire that assesses health and medical and pharmaceutical needs; the status of public health services; and access to basic services such as water, sanitation and hygiene, food, shelter, sewage, and electricity.

مدیریت اجساد در سیل

- The public is often concerned about the danger of disease transmission from decaying corpses.

- Responsible health authorities should be aware that health hazards such as epidemics associated with unburied bodies are minimal, particularly if death resulted from trauma or drowning.

- Mass graves are not necessary when considered solely to prevent the spread of disease caused by mass fatalities. Normal funeral ceremonies and practices should be respected and maintained whenever possible.

اقدامات بالینی در سیل

- Health caregivers should anticipate flood-related adverse health effects and be prepared to detect and intervene effectively when they occur.

- Flood-related injuries frequently include soft tissue lacerations, contusions, and abrasions. Endemic infectious diseases as well as chronic diseases may worsen.

- Mental illness and toxic exposures, for example carbon monoxide and mold, are known to increase after floods but may manifest with nonspecific symptoms such as malaise, anxiety, headaches, and nausea.

- Active surveillance data should be used to justify consideration of an immunization campaign. Basic rules of hygiene and sanitation are far more important than immunizations in preventing infectious disease that floodwaters could potentially spread.

خدمات بهداشت محیط

- The demands for environmental health services and consultation are high during flood disasters. The following are common considerations:
- Purification of drinking and cooking water
- Disinfection of wells
- Food safety
- Sanitation and personal hygiene
- Mosquito control

پاسخ به فوریت های شیمیایی

- The role of public health in the investigation of a flooding event that results in a chemical release should include the following activities
- Hazard identification
- Risk communication
- Liaison with other relevant responder agencies
- Technical advice including aspects of toxicology, decontamination, antidotes, and personal protective equipment
- Registry and follow-up of exposed casualties
- Emergency plan development for flooding in other high-risk areas.

حمایت های روانی – اجتماعی

- A complex set of social and other factors define flood victims’ susceptibility to health and stress effects.

- There is some evidence that effective community and professional agency management of the flooding aftermath can mitigate deleterious mental health outcomes, which in turn are strongly associated with physical health effects.

نتیجه گیری

چالش ها

- ضعف سیستم مدیریت اطلاعات یکپارچه مورد نیاز عملیات امداد، نجات و سلامت
- ضعف سیستم ثبت اطلاعات و آمار مربوط به خسارات و هم چنین خدمات ارایه شده در سیل حوادث
- اختلال در ارایه خدمات بهداشتی درمانی بدلیل آسیب به مراکز و بیمارستان ها
- ساخت مراکز بهداشتی درمانی و بیمارستان ها در پهنه‌ها خطر سیلاب
- عدم برنامه ریزی برای حضور سازماندهی شده تیمهای داوطلب و مشارکت مردمی در مناطق تحت تاثیر
- ضعف در توزیع کمک‌های مردمی به صورت عادلانه، برابر، استاندارد
- حضور متعدد مسئولین در منطقه که منجر توقف فرایندهای معمول به جهت همراهی آنان
- صدور دستورهای اجرایی بدون شناخت کافی از شرایط موجود و منابع در دسترس توسط مسئولین

چالش ها

- درخواست گزارش‌های متعدد با ساختارهای مختلف در بازه زمانی کوتاه
- ضعف در نظام حمایت های روانی- اجتماعی مردم و سرمایه های انسانی نظام امداد، نجات و سلامت
- ارائه خدمات درمانی رایگان و دریافت بی‌رویه و بدون نظارت دارو و خدمات توسط مردم و اتلاف منابع
- بسیج منابع بهداشتی درمانی در منطقه بدون نیازسنجی و توزیع ناعادلانه اقلام امدادی
- پوشش ناکافی بیمه سرمایه های فیزیکی نظام سلامت و امداد و نجات
- توزیع منابع بدون در نظر گرفتن نتایج ارزیابی حطر
- عدم وجود نقشه های معتبر و دقیق در سازمان‌های امدادی برای انجام بهتر عملیات امداد و نجات
- ضعف در وجود تجهیزات لازم جهت امدادرسانی و ارائه خدمات در شرایط سیلاب

پیشنهادات اجرایی

- تدوین برنامه جامع ساخت و نگهداری زیرساخت های امداد، نجات و سلامت مبتنی بر ارزیابی پهنه های خطر سیلاب های با دوره بازگشت بالای ۵۰ سال
- راه اندازی سامانه یکپارچه مدیریت اطلاعات حوادث و بلایا
- گسترش مدیریت جامعه محور بلایا و ساماندهی ظرفیت مشارکت های مردمی
- تدوین و اجرای برنامه تاب آوری نظام سلامت در برابر حوادث و راه اندازی نظام پایش و ارزیابی آن در وزارت بهداشت
- تدوین و اجرای برنامه تاب آوری جوامع و پایش آن به صورت بین بخشی اساس قانون برنامه ششم توسعه

پیشنهادات اجرایی

- تدوین برنامه ملی سازگاری با اقلیم برای نظام سلامت و جوامع در برابر تغییر اقلیم توسط وزارت بهداشت
- تدوین برنامه مشترک مدیریت مشارکت های بشردوستانه بین المللی
- تشکیل ستاد ویژه ترخیص کمک های بشردوستانه توسط گمرک جمهوری اسلامی ایران و با عضویت دستگاهای مسئول
- سرمایه گذاری در تشکیل شرکت های دانش بنیان حوزه سلامت
- تدوین، اجرا و پایش برنامه حمایت های روانی- اجتماعی مردم و بازتوانی پرسنل امداد، نجات و سلامت
- راه اندازی سامانه سنجش و پایش کمی آمادگی و عملکرد کارگروه¬ها
- تدوین پروتکل تامین امنیت عملیات امداد، نجات و سلامت توسط نیروی انتظامی و با همکاری نیرو های نظام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Rokna


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