

Health effects of desert dust storm events in the south-eastern Mediterranean: perceptions and practices of local stakeholders

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Abstract

Background: The south-eastern Mediterranean experiences frequent desert dust storm events (DDS) that have been shown to be associated with adverse health effects.

Aims: This study assessed the perceptions and practices towards DDS of local authorities and stakeholders from 3 countries in the region, Cyprus, Greece and Israel.

Methods: Between October 2017 and April 2018, we administered a semi-structured questionnaire to regulatory authorities involved in public protection from DDS as well as social stakeholders in the 3 countries. The questionnaire addressed their knowledge regarding DDS, perceptions on the relationship between DDS and health effects and relevant actions taken towards public protection.

Results: Out of 58 stakeholders contacted, 49 participated in the study (84.5% response rate). Fourteen (28.6%) were regulatory authorities and 35 (71.4%) were social stakeholders. All responders were familiar with DDS but several underestimated the frequency of events while the majority (73%) instinctively reported that elders, children and respiratory patients are susceptible subpopulations. Nevertheless, 71% were unaware of a national policy on DDS, or considered that this was lacking in their country. Although several stakeholders reportedly receive questions from the public regarding DDS effects, only few reply according to a pre-determined action plan.

Conclusions: Regulatory authorities and social stakeholders in Cyprus, Greece and Israel are characterized by good knowledge of DDS and associated health effects, although implementation of pre-determined action plans for public protection is limited. Future efforts should concentrate on increasing awareness among stakeholders and the public and developing national policies, including effective measures to minimize DDS exposure.

Keywords: desert dust storm, public health, perceptions, questionnaire, stakeholders

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Introduction

The south-eastern Mediterranean region is affected by frequent and often severe desert dust storms (DDS) lasting several days. These are characterized by extremely high levels of coarse particles with aerodynamic diameter between 2.5 μm and 10 μm (PM_{10}) as well as by increases in fine particles with aerodynamic diameter < 2.5 μm ($\text{PM}_{2.5}$) (1,2). Cyprus, Crete (Greece) and Israel are in the centre of this region experiencing DDS events that originate from both the Sahara and the Arabian Peninsula deserts (3). With reducing precipitation and advancing desertification in the region due to ongoing climatic change, these countries are expected to experience further increases in the frequency and severity of DDS events in the future (4,5).

Consistent evidence from toxicological and epidemiological studies has demonstrated the negative impact of desert dust on cardiorespiratory health. More specifically, data generated from rodent and cell-line assays have highlighted the potential of naturally generated particles to inhibit immunoglobulin-mediated suppression of inflammation (6), amplify pro-inflammatory cytokines and oxidative stress in respiratory epithelial cells (7) and exacerbate pulmonary eosinophilia (8) and tissue injury (9). Through systemic circulation, smaller particles and toxic substances in desert dust may be transported to all tissues and previous studies have reported increased endothelial dysfunction (10), increased heart rate and mean blood pressure and decreased cardiac contractility (11). These findings are in line with epidemiological studies from around the world, which reported significant associations with both

respiratory (asthma, pneumonia, chronic obstructive pulmonary disease, allergic rhinitis, coccidiomycosis) and cardiovascular (stroke, arrhythmia, ischaemic heart disease, cerebrovascular disease) outcomes (12). Preliminary evidence, also supports the association of desert dust with reproductive (13), neurological (14) and dermatological (15) health effects, as well as with a higher incidence of meningococcal meningitis (16) and conjunctivitis (17).

In previous years, studies from the region have reported associations of PM₁₀ during DDS outbreaks with increased hospital admissions for asthma, chronic obstructive pulmonary disease and cardiovascular disease as well as increased mortality (18–21). However, evidence on the societal concerns and risk perception in relation to DDS events and the associated health problems in these countries is limited (22). Furthermore, there are no data on either the current knowledge and relevant practices of the regulatory authorities or the knowledge and perceptions of involved social stakeholders in the region regarding the health effects of DDS events. As shown before, research in stakeholder perceptions and knowledge has been useful in identifying and prioritizing problems that could and should be resolved, especially in situations where there is no single organization or individual totally in charge, but many are partially involved or affected (23). Thus, in order to introduce effective, easy to implement and sustainable policy interventions towards the mitigation of DDS health effects, it is important to interrelate evidence on the concerns of stakeholders and the capabilities of the regulatory authorities in science-based stakeholder dialogues (24).

The aim of this study was to capture the current state of knowledge and consensus about DDS events and their impact on human health among relevant regulatory authorities (governmental) and societal stakeholders (patients, parents, municipalities, academics, nongovernmental organizations) in Cyprus, Crete (Greece) and Israel.

Methods

Study participants

In order to include a wide range of considerations on DDS events, we adopted an inclusive definition of stakeholders (25). As described elsewhere (25–27), we defined stakeholders as “every person or organization who/which can influence discussions about the development of policy measures for mitigating the health effects of DDS events”. The International Risk Governance Council classifies stakeholders in 4 types: regulatory authorities, affected stakeholders, external scientists and civil society organizations (28). However, we adopted some changes to this classification to address the needs of the study. Thus, we considered 2 types of stakeholders: regulatory authorities and social stakeholders. Regulatory authorities were defined as governmental institutions involved in public protection in relation to DDS events. A subcategorization for regulatory authorities was created

depending on whether these were educational, health or environmental bodies. Social stakeholders were subdivided into patients’ support groups, medical associations, parents’ associations, trade unions, municipalities and academic/research institutions.

For the purposes of the study we adopted a judgmental sampling method where participants were identified based on their professional backgrounds, affiliations and experience with DDS events and this allowed us to collect and examine the perceptions and views from different perspectives. In the category of regulatory authorities, representatives holding key positions in organizations that influence the development and management of public health, environmental and education policies were contacted (e.g. ministries of environment, health, labour, education). In the case of municipalities and trade unions, occupational health safety professionals who are involved in the management of occupational health safety risks were identified. Patients’ support groups, medical associations and parents’ associations were chosen because they act as liaisons with the respective patient groups and the relevant health care and education professionals. In the category of academic/research institutions, we selected experts from various fields who are involved in environmental, air pollution and public health studies.

The survey was conducted between October 2017 and April 2018 and 6 researchers were involved in data collection, 2 from each country.

Data acquisition and survey procedure

This study employed a cross-sectional survey study design and used semi-structured questionnaires for data collection, which is considered a suitable approach that can yield a significant amount of information related to the phenomenon under study and also be able to focus on the specific study objectives (29).

The semi-structured questionnaires examined the knowledge of participants on DDS events, their perception on the relationship between DDS events and health effects and the relevant actions taken by their organization towards protecting public health from DDS events. The questionnaires were developed through critical comparative analysis and adaptation of existing international questionnaires that were originally used to assess the awareness of professionals in regard to environmental health issues and early warning systems (30,31). The questionnaire was initially developed in English and forward translated in Greek. Two independent bilingual speakers, then back translated the agreed Greek version. The agreed back translation was sent to the authors for their comments and their suggestions were included into the final Greek version. Prior to implementation of the main study, the questionnaires were administered to a restricted sample in order to assess efficacy and applicability and ensure that the questionnaire was culturally acceptable, comprehensible and readable in Cyprus, Crete and Israel.

Relevant comments were discussed and incorporated to the final version of the questionnaires.

The questionnaire included both open-ended and multiple choice questions. It comprised 2 parts (part A and part B). Part A was common for both types of stakeholders and included 17 questions inquiring about knowledge, perceptions and attitudes towards DDS events. The items in Part B differed according to whether the responder was representing a regulatory authority or a social stakeholder. For the regulatory authorities, the items in Part B examined applied practices and policies for early warning systems for DDS events, while in the case of social stakeholders, Part B included questions on their attitudes towards governmental responses to DDS events as well as their own practices for the mitigation of the health effects of DDS events. (Both parts of the questionnaire, translated into English, are available from the authors on request.)

Analysis

Stakeholders' responses were collected in paper format and a combined dataset from all 3 sites was created. Descriptive statistics were calculated using STATA, version 12, and results were summarized in frequency tables and graphs. For nonparametric data comparisons, the Mann-Whitney U-test was used.

Results

Participants

In total, 58 stakeholders were identified and contacted in Cyprus, Greece and Israel, and 49 of them agreed to participate in the survey (84.5% overall response rate). An overview and summary statistics of the participants across the 3 countries are provided in Table 1 (a detailed list of all participants is available on request). Of the 49 completed questionnaires, 14 (28.6%) were obtained from regulatory authorities and 35 (71.4%) from social stakeholders. A total of 13 (27%) participants were health professionals (medical doctors, nursing personnel and public.

Knowledge about DDS events and associated health effects

All responders stated that they were familiar with the DDS phenomenon. The median perceived frequency of the DDS events was 6 episodes per year (range 1–24 episodes per year). Twenty-five (51%) participants reported that DDS annual frequency is less than 10 episodes per year, while 14 participants (nearly 30%) reported that it is 10 or more episodes per year. Similarly, among health professionals, only 38% reported an annual DDS frequency of ≥ 10 episodes per year. In addition, it is noteworthy that one fifth of the responders did not know how often DDS events occur (Table 2). Spring (44%) season was perceived as the season with the highest frequency of DDS events, followed by summer (31%), fall (18%) and winter (8%).

Table 1 Distribution of participants (regulatory authorities and social stakeholders) and response rates according to category/country, 2017–2018

Type	No. participants contacted	Responses	
		No.	%
Category			
Health	5	5	100
Educational	3	3	100
Environmental	8	7	88
Patient/caregiver/teacher	7	6	88
Medical	8	6	75
Municipality	11	7	64
Trade union	3	3	100
Academic and research	13	12	92
Total	58	49	84
Country			
Cyprus	29	25	86
Crete (Greece)	17	16	94
Israel	12	8	67
Total	58	49	84

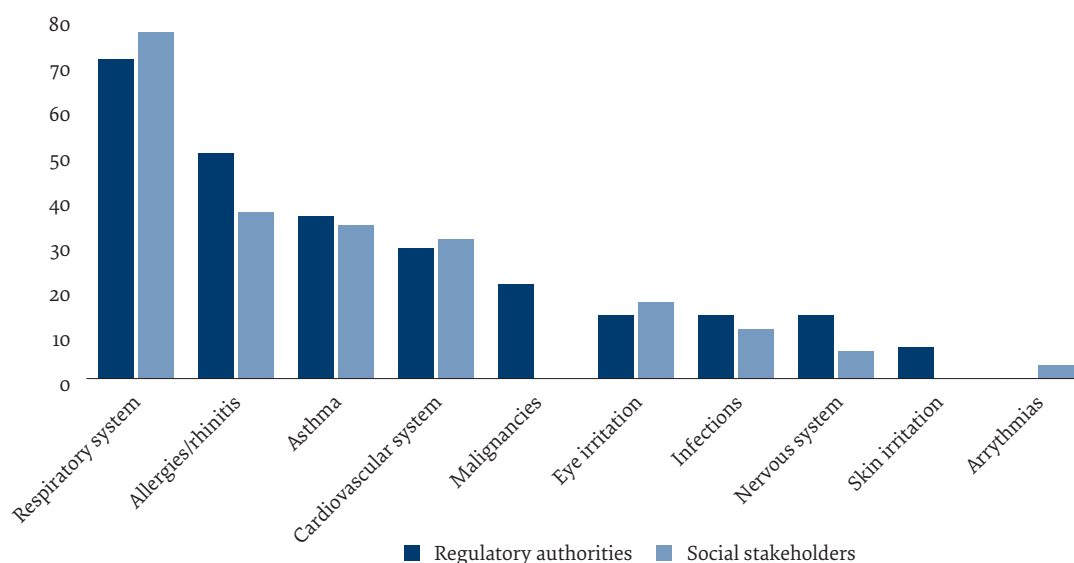
Almost all responders (87.9%) were aware that DDS events may be associated with specific health effects. As their primary sources of information, they named scientific articles (32%), the Internet (22%) and coursework during academic studies (20%). Less frequently reported sources of information were scientific conferences (11%) and mass media (10%). Most responders from regulatory authorities (71%) instinctively acknowledged that elderly individuals and children are subpopulations susceptible to DDS; this was even higher among social stakeholders (74% for the elderly and 77% for children). Among health professionals the percentages were even higher with 85% suggesting vulnerability of the elderly and 92% of children. Figure 1, presents in detail, the distribution of responses on possible health effects associated to DDS events among regulatory authorities and social stakeholders. Respiratory conditions and allergies were the most frequently mentioned.

Current practices in response to desert dust

Table 2 Perceived annual frequency (no. of episodes) of desert dust storm (DDS) events from regulatory and social respondents in Cyprus, Greece (Crete) and Israel, 2017–2018

Perceived annual frequency of DDS events	No. (%) responses
< 5	14 (28.6)
5 to < 10	11 (22.4)
10 to < 15	7 (14.3)
15 to < 20	3 (6.1)
≥ 20	4 (8.2)
Don't know	10 (20.4)

Figure 1 Health effects of desert dust storm (DDS) events: distribution of unprompted responses on the knowledge of health effects associated with DDS events among regulatory authorities and social stakeholders in Cyprus, Greece (Crete) and Israel, 2017–2018



storm events

Approximately 42% of regulatory authorities and 22% of social stakeholders reported that they receive questions from the general public or vulnerable populations on the possible adverse health effects of DDS. However, 21% of regulatory authorities and 11% of social stakeholders did not know whether their organization receives questions from the public on this issue. Among the regulatory authorities that receive questions, 3 (50%) provide standardized replies according to a pre-determined action plan. None of the social stakeholders that reported receiving questions from the public provides standardized replies.

Furthermore, of all the social stakeholders, only 29% believe that there is a national policy regarding DDS in their country. Another 34% considered that a national policy regarding DDS events was lacking, while the remaining 37% did not know whether a national policy exists or not. Even within the regulatory authorities' representatives, the proportion that considered that national legislation on DDS events is in place was still low, but relatively higher than among the social stakeholders (43% versus 29%). Four regulators (29%) did not consider that a national policy exists while another 4 stakeholders (29%) reported that they were unaware whether a national policy exists or not. Among health professionals, 54% thought that a national policy exists, 31% that it does not exist and 15% were unaware whether a national policy exists or not. The majority (69%) of the 35 social stakeholders participating in the study believe that vulnerable groups and decision-makers receive only partial information on the potential health impacts of DDS events. A small proportion (23%) receive direct warnings on DDS events, usually only one day before the event. Nevertheless, only 9% actively disseminate information on DDS health effects to the public, specific vulnerable groups or their members.

Table 3 provides an overview of participants' responses when asked to assess the relevance of different public policy actions towards protecting vulnerable populations from DDS events. In general, regulatory authorities provided higher ratings to most of the suggested actions. The involvement of mass communications media and the implementation of information activities at the community level were given the highest rating by members of the regulatory authorities, while both groups assigned equal importance to the development of training materials for future professionals. Other findings included generally higher ratings for all proposed actions from health authorities compared with the ratings provided by educational and environmental authorities. Similarly, medical associations also tended to give higher ratings to the proposed actions compared with other social stakeholders.

Desert dust storm events and indoor environment

Both regulatory authorities and social stakeholders agree that DDS events result in increased concentration of air pollutants in indoor environments although there was some disagreement on the magnitude of this effect. More than half of the social stakeholders (51.4%) consider that DDS events result in higher concentrations in indoor environments to some extent. Another significant fraction of social stakeholders reported that indoor concentrations are increased a lot (32.4%), while a smaller proportion considered that the increase in indoor concentrations due to DDS events is small (13.5%). Participants from regulatory authorities provided slightly more conservative estimates as 27.3% reported that indoor concentrations are increased only by a small amount, 45.6% to some extent and 27.3% a lot. Nevertheless, both groups agreed on the usefulness of air cleaning devices as a measure to mitigate the negative impacts of DDS events.

Table 3 Expressed relevance of actions for the protection of vulnerable populations from desert dust storm events among study participants (regulatory authorities and social stakeholders in Cyprus, Greece (Crete) and Israel, 2017–2018)

Action	Expressed relevance of action, median (min, max) ^a									
	Regulatory authorities			Social stakeholders						
	Health (n = 5)	Educational (n = 2)	Environmental (n = 7)	All regulatory authorities (median) (n = 14)	Patients/caregivers/teachers (n = 7)	Medical associations (n = 6)	Trade unions (n = 3)	Academic/research (n = 12)	Municipalities (n = 7)	All social stakeholders (median) (n = 35)
Epidemiological environmental studies	9 (7, 10)	9.5 (7, 10)	8 (1, 10)	9 (1, 10)	8 (1, 10)	9.5 (8, 10)	8 (8, 10)	8.5 (3, 10)	9 (5, 10)	9 (1, 10)
Development of training materials for future professionals	9 (8, 10)	8 (7, 10)	8 (2, 10)	8 (2, 10)	9 (2, 10)	9.5 (8, 10)	9 (9, 9)	8 (5, 10)	8 (7, 10)	9 (5, 10)
Government action through advocacy (lobbying)	9 (5, 10)	8.5 (6, 10)	6.5 (2, 10)	8 (2, 10)	6 (2, 10)	7.5 (6, 8)	10 (8, 10)	8 (5, 10)	8 (5, 10)	8 (2, 10)
Legislative action/ policy development	10 (5, 10)	8.5 (2, 10)	8 (3, 10)	8 (3, 10)	9 (1, 10)	9.5 (6, 10)	10 (10, 10)	8 (5, 10)	9 (3, 10)	9 (3, 10)
Media involvement to raise awareness	10 (7, 10)	10 (8, 10)	8.5 (6, 10)	10 (6, 10)	10 (6, 10)	8.5 (6, 10)	8 (8, 9)	9 (6, 10)	9 (7, 10)	9 (6, 10)
Information activities at community level	10 (8, 10)	8 (4, 10)	7 (1, 10)	8 (1, 10)	8 (7, 10)	7.5 (1, 10)	6 (5, 8)	8 (1, 10)	6 (4, 10)	7 (1, 10)
Include topic as part of school curriculum	10 (8, 10)	7.5 (7, 10)	5.5 (1, 10)	8 (1, 10)	6 (1, 10)	8.5 (1, 10)	7 (6, 9)	8.5 (1, 10)	8 (5, 10)	8 (1, 10)
Development of interdisciplinary and intersectoral networks	8 (6, 10)	8.5 (5, 9)	7 (1, 10)	8 (1, 10)	10 (2, 10)	9 (1, 10)	8 (7, 9)	7.5 (1, 10)	8 (5, 10)	8 (1, 10)

^aScale 1–10: 1 = not relevant at all, 10 = completely relevant.

A positive response was provided by 72.7% of participants from regulatory authorities and 70.3% from the social stakeholders. Almost all of the remaining responders, replied that they were unaware of the usefulness of indoor air cleaners and only 3 social stakeholders (8.1%) reported that they do not believe that air-cleaners would mitigate the negative impacts of DDS events. A positive opinion on the usefulness of air cleaners was also noted among health professionals (70%).

In total, 29 out of 49 participants (59.2%) provided responses on the annual cost of using such indoor air cleaners (8 responses from regulatory authorities and 21 from social stakeholders). There was a high level of agreement between the groups on the amount a household would be willing to spend for such a device per year. The median amount for regulatory authorities' representatives was 150 euros/year with an interquartile range (IQR) of 72.5–235, while the median amount for social stakeholders was 120 euros with an IQR of 100–300, ($P = 0.767$).

Discussion

The south-eastern Mediterranean is affected by DDS events in increasing frequency and intensity due to climate change (4). To our knowledge, this is the first study to explore the current knowledge, practices and perceptions of regulatory authorities and social stakeholders regarding the DDS phenomenon and associated health effects in the geographical region of the eastern Mediterranean. Despite the substantial level of concern for DDS in the 3 study areas, there is limited application of pre-determined action plans for these events. Furthermore, the majority of social stakeholders in the 3 areas believe that neither decision-makers nor the public are fully informed on the potential health impacts of DDS. Only a minority of them report receiving some form of early warnings for these events and even fewer disseminate this information to their members, vulnerable groups or the public.

Spring was identified as the season most frequently affected by DDS events, which is in agreement with findings of scientific observations (1), but most responders underestimated the overall frequency of the event. Previous studies have demonstrated that the region experiences approximately 15–30 events per year (32–34) or approximately 13–36 annual dust days (1,35). In our study, only about 10% of the participants reported

a similar or higher frequency. Almost all responders instinctively identified respiratory complications as the main health effect of DDS events, while other effects, particularly from the cardiovascular system, were greatly underestimated and were reported by fewer responders. In fact, numerous studies have already demonstrated a strong and consistent link between DDS events and cardiovascular mortality and morbidity both in Asia and Europe (20,36,37). This discrepancy underlines the lack of knowledge of the wide body of evidence on the main health effects of DDS events (12) and poor dissemination of existing evidence to regional stakeholders.

Although both social stakeholders and regulatory authorities acknowledge that DDS may affect indoor air quality, their opinion on the magnitude of this effect was variable. Few studies have examined this aspect and shown that there is high infiltration of outdoor PM to the indoor environment during DDS events (38,39). More specifically, in Israel the infiltration factor reached 0.82 for $PM_{2.5}$ and 0.72 for PM_{10} during DDS events (39), while a study in Japan has shown that just leaving the window open for 10 minutes during a dust event resulted in a rapid increase in indoor particulate matter counts up to 70% of the outside particulate matter (38). However, it should be noted that infiltration factors also vary depending on the ventilation system, household floor level and presence of pets (38–40), and fine particles are able to infiltrate more efficiently into the indoor environment compared with larger particles even when windows are closed (39). In this respect, the majority of the responders not surprisingly considered as beneficial the use of an indoor air cleaner as a measure to mitigate the negative impacts of DDS events. This view is in agreement with the findings of recent studies demonstrating the effectiveness of air cleaners to remove particulates from indoor air in households (41–43) and schools (44). Also of interest is that most of the responders were willing to spend 70 to 300 euros per year for such a device (including electricity consumption). This amount is realistic, taking into consideration that the retail cost of quality HEPA air cleaners ranges between US\$ 200 and US\$ 400 and electricity consumption of the most recent models is low (< 120 Watts) (45).

The main strength of our study is that it captures for the first time the current perspectives and practices in regard to DDS events of regulatory authorities and a wide range of social stakeholders across 3 countries in the south-eastern Mediterranean. The only other study that focused on public health policy for DDS events was recently carried out in the Islamic Republic of Iran and focused on the preparedness challenges of the local health system in response to DDS. It demonstrated that senior policy-makers and executives were not fully familiar with DDS and the related health effects, the severity of the phenomenon, and the identification of high-risk areas. It also highlighted the lack of DDS-specific action plans and the need for integrated training programmes and increasing population awareness (46). Collectively these findings may assist the intercalation of scientists and stakeholders, which is an integral part of any participatory decision making process for the development of national and international policies (27). Failure to attend carefully to stakeholder interests, state of knowledge and perceptions in the past has been repeatedly shown to result in negative outcomes (47).

The findings of this study are expected to enhance cooperation among various actors and provide the foundation for stakeholders and regulatory authorities to define their responsibilities towards a range of intervention measures aiming to minimize DDS exposure and associated health problems. Furthermore, as DDS events constitute a common environmental health risk that is usually transboundary, originating from multiple dust sources and affecting multiple countries at once (48–50), our study contributes towards the dissemination of knowledge and sharing of public health policies between the countries of the region. Although not all countries of the region experience the same intensity and frequency of DDS, international collaboration between regulatory authorities (meteorological forecasters, air pollution monitoring stations and health authorities) may facilitate the development of a regional, or even global, desert dust health warning system and transfer of best practices between countries, as suggested previously (51). In line with this approach, the ongoing European Union-funded InDust COST action aims to facilitate the development of an international network of scientists working on linking dust forecasting models and ground measurements with early warning systems (52).

It is suggested that DDS warnings be disseminated through multiple, pre-defined and well maintained notification channels and must be clear, consistent and accurate, targeting distinct audiences such as health care professionals, educators and outdoor workers as well as the general public (53). Warning messages should also be accompanied by specific evidence-based guidelines aimed at reducing the health impact of DDS, especially among vulnerable population groups. These guidelines can include behavioural adaptations to reduce exposure to PM_{10} by limiting time spend outdoors and reducing outdoor physical activities during DDS, while indoor concentrations of PM_{10} can be controlled using a HEPA air cleaner. The feasibility and effectiveness of these guidelines will be assessed in 2 large field studies focusing on children with asthma and elderly patients with atrial fibrillation as part of the demonstration project MEDEA (Mitigating the Health Effects of Desert Dust Storms Using Exposure-Reduction Approaches), which is funded by the European Union LIFE Programme (54).

Our study is also characterized by some limitations. We acknowledge that some of the organizations contacted, did not participate in the study and the possibility that our results may have been influenced by non-responder bias cannot be ruled out. Furthermore, the response rate was higher in Greece and Cyprus than in Israel, which may reflect cultural differences (mentality, unwillingness to share information), unfamiliarity with European collaborative projects as well as possible security concerns. Secondly, the participation in some categories, such as the medical and municipalities groups, was lower than in other categories. This could be largely attributed to their possible different attitudes toward DDS events (perceived less relevant to them) and their possible hesitation to share information due to lack of specific knowledge on the subject. Nevertheless, although the sample of surveyed participants was not homogeneous (particularly in terms of ethnicity and background), its diversity is representative of the study area and the researchers tried to saturate concepts by many well experienced participants.

Conclusion

This study analysed the perceptions and practices of regulatory authorities and social stakeholders regarding DDS events in 3 countries in the south-eastern Mediterranean region. Our results demonstrate high awareness for this phenomenon and a good understanding of some

of the related health effects among stakeholders in the 3 countries but also limited existence and hence application of pre-determined action plans for DDS events. Our findings are expected to inform and further support an ongoing public dialogue in the region for the development of intervention measures aimed at minimizing DDS exposure and associated health effects.

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Effets sanitaires des tempêtes de poussières désertiques dans le sud-est de la Méditerranée : perceptions et pratiques des parties prenantes locales

Résumé

Contexte : Le sud-est de la Méditerranée subit fréquemment des tempêtes de poussières désertiques qui se sont révélées être associées à des effets néfastes sur la santé.

Objectifs : La présente étude a évalué les perceptions et les pratiques des autorités locales et des parties prenantes concernant les tempêtes de poussières, dans trois pays de la région : Chypre, la Grèce et Israël.

Méthodes : Entre octobre 2017 et avril 2018, nous avons demandé aux autorités de réglementation impliquées dans la protection du public contre les tempêtes de poussières ainsi qu'aux parties prenantes sociales des trois pays de remplir un questionnaire semi-structuré. Ce questionnaire portait sur leurs connaissances au sujet des tempêtes de poussières, leur perception de la relation entre ces dernières et les effets sur la santé et les mesures pertinentes adoptées pour protéger le public.

Résultats : Sur les 58 parties prenantes contactées, 49 ont participé à l'étude (taux de réponse de 84,5%). Quatorze (28,6 %) étaient des autorités de réglementation et 35 (71,4 %) des parties prenantes sociales. Tous les répondants avaient des connaissances sur les tempêtes de poussières désertiques, mais plusieurs d'entre eux sous-estimaient la fréquence des événements, tandis que la majorité (73 %) avait instinctivement indiqué que les personnes âgées, les enfants et les patients souffrant de troubles respiratoires étaient des sous-populations qui y sont sensibles. Néanmoins, 71 % d'entre eux n'avaient pas connaissance de l'existence d'une politique nationale en matière de protection contre les tempêtes de poussières, ou considéraient qu'elle faisait défaut dans leur pays. Même si plusieurs parties prenantes ont indiqué avoir reçu des questions du grand public concernant les effets des tempêtes de poussières désertiques, seules quelques-unes y ont répondu selon un plan d'action prédéterminé.

Conclusions : À Chypre, en Grèce et en Israël, les autorités de réglementation et les parties prenantes sociales font preuve d'une bonne connaissance des tempêtes de poussières et de leurs effets sur la santé, bien que la mise en œuvre de plans d'action prédéterminés pour la protection du grand public soit limitée. À l'avenir, il sera nécessaire d'augmenter la sensibilisation à ce sujet parmi les parties prenantes et le grand public et d'élaborer des politiques nationales, notamment des mesures efficaces pour minimiser l'exposition aux tempêtes de poussières désertiques.

الآثار الصحية لأحداث العواصف الترابية الصحراوية في جنوب شرق البحر المتوسط: تصورات وممارسات الجهات صاحبة المصلحة المحلية

باراسكيفي كيني، بانايوتيس كويس، هيلين ديميتريو، شاكد يرزا، ستيفانيا باباثيودورو، إيريني كامبرياني، ميلاني شارالامبوس، نيكوس ميدلتون، فيكتور نوفاك، إمانويل جالاناكيس، بانايوتيس يالوروس

الخلاصة

الخلفية: تشهد منطقة جنوب شرق المتوسط العديد من أحداث العواصف الترابية الصحراوية التي ثبت ارتباطها بآثار صحية ضارة. الأهداف: هدفت هذه الدراسة الى تقييم تصورات وممارسات السلطات المحلية والجهات صاحبة المصلحة إزاء العواصف الترابية الصحراوية في ثلاثة بلدان في المنطقة، وهي قبرص واليونان وإسرائيل.

طرق البحث: في الفترة بين أكتوبر / تشرين الأول 2017 و أبريل / نيسان 2018، أرسلنا استبياناً شبه مُنظَّم إلى كل من السلطات التنظيمية المعنية بالحماية العامة من العواصف الترابية الصحراوية والجهات صاحبة المصلحة في المجال الاجتماعي في البلدان الثلاثة. وتناول الاستبيان معرفة هذه السلطات والجهات بالعواصف الترابية الصحراوية وتصوراتها إزاء العلاقة بين العواصف الترابية الصحراوية والآثار الصحية، والإجراءات ذات الصلة المتخذة من أجل حماية الجمهور.

النتائج: شاركت في الدراسة 49 جهة من الجهات صاحبة المصلحة من أصل 58 جهة جرى الاتصال بها (بمعدل استجابة بلغ 84.5٪). وبلغ عدد المستجيبين من السلطات التنظيمية 14 (28.6٪)، و35 جهة من الجهات صاحبة المصلحة في المجال الاجتماعي (71.4٪). وكان جميع المستجيبين على دراية بالعواصف الترابية الصحراوية، ولكن كثيرين منهم هَوَّنوا من تواتر الأحداث، في حين أشار غالبيتهم (73٪) بعفوية إلى أن المسنين والأطفال ومرضى الجهاز التنفسي هم الفئات الفرعية من السكان التي تتأثر بهذه العواصف. ومع ذلك، لم يكن 71٪ منهم على علم بوجود سياسة وطنية معنية بالعواصف الترابية الصحراوية، أو رأوا أن بلددهم يفتقر إلى مثل هذه السياسة. وعلى الرغم من ورود تقارير تفيد بأن العديد من الجهات صاحبة المصلحة تتلقى أسئلة من الجمهور تتعلق بآثار العواصف الترابية الصحراوية، لم يجب سوى عدد قليل من هذه الجهات وفقاً لخطة عمل محددة سلفاً.

الاستنتاجات: تتميز السلطات التنظيمية والجهات صاحبة المصلحة في المجال الاجتماعي في قبرص واليونان وإسرائيل بمعرفتها الجيدة بالعواصف الترابية الصحراوية والآثار الصحية المرتبطة بها، رغم أن تنفيذ خطط العمل المحددة سلفاً للحماية العامة محدود. لذلك، ينبغي أن تركز الجهود في المستقبل على زيادة الوعي بين الجهات صاحبة المصلحة والجمهور ووضع سياسات وطنية، بما في ذلك اتخاذ تدابير فعالة للتقليل من التعرض للعواصف الترابية الصحراوية إلى أدنى حد.

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