Measuring patient hazard exposure – the missing middle in disaster mortality prevention

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BACKGROUND

Epidemiologists have historically used patient specific exposure data to evaluate disease risk and align treatment modalities based on patient characteristics, therein building the evidence base to describe the relationship between hazard exposure dynamics, health risk and intervention efficacy.

This study reviewed patient hazard exposure collection in six large natural hazard disasters and compared published literature about disaster-hazard exposure, health risk and discussion of exposure significance.

METHODS

Patient data collection forms used by primary and secondary health care providers during emergency health and medical response to seven large natural hazard disasters (typhoon, earthquake, flood, smoke-haze, thunderstorm asthma and COVID-19) were reviewed and compared to standard in-patient data collection.

Data fields, clinical observations and notes relating to potential exposure characteristics were recorded and contrasted.

A literature review and analysis of disaster exposure health risk assessment and definitions and commentary of disaster 'exposure' provided as global guidance to countries by UN programs compared with approaches used by health and medical disciplines.
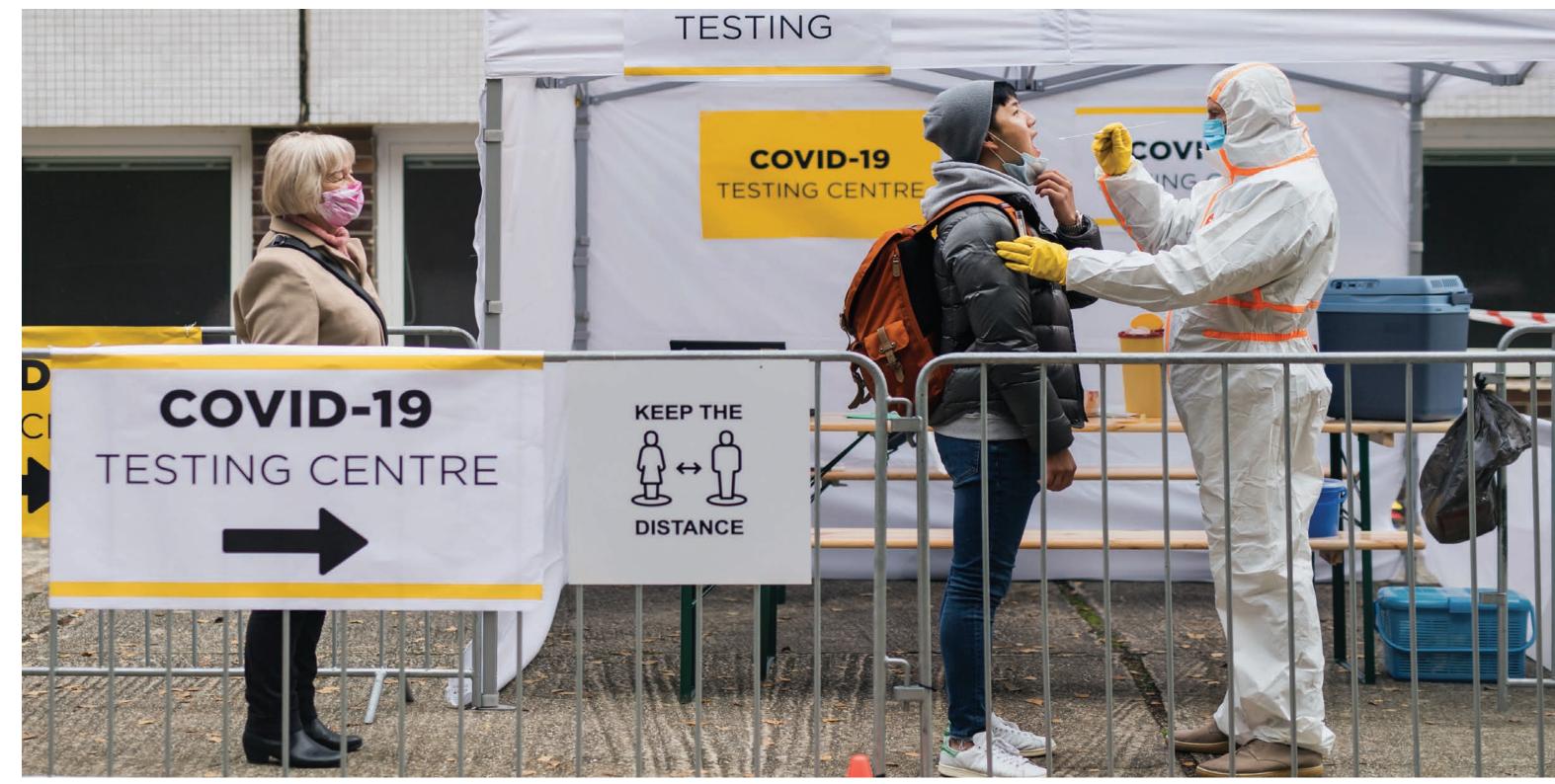

RESULTS

Patient hazard exposure data was typically limited to onset of symptoms and duration relative to hazard impact. Little qualitative or quantitative assessment of exposure characteristics or patient-environmental data for any hazard other than COVID-19 was collected or reported.

Negligible difference between pre-and post-event data capture was noted, with the exception of data collected by partner providers.

UN programs framed 'exposure' as a measure of collective entities impacted, closely resembling the insurance sector definitions but starkly different to health and medical sectors.

In comparison, other risk variable functions of 'hazard' and 'vulnerability' are extensively studied, reported, and discussed in scholarly and industry literature.

CONCLUSIONS

Building an evidence base which correlates hazard exposure and health risk requires urgent attention and prioritization by all health and medial agencies globally.

Such advances are readily achievable through simple inclusions to minimum patient datasets and advocacy by health providers and epidemiologists.

Understanding hazard-exposure health-impact dynamics for different contexts are vital for disaster preparedness and especially planning healthcare delivery for vulnerable groups at critical timeframes across the exposure-health-risk time continuum post exposure.

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