

ALL-CAUSE HOSPITAL ADMISSIONS AT LISMORE BASE HOSPITAL AFTER THE CATASTROPHIC FLOOD OF FEBRUARY 2022

Jolly, Grace 1
Duncan, Joseph 1,2,3

1. The University of Sydney
2. University Centre for Rural Health
3. Lismore Base Hospital, Lismore

Introduction

Floods are the most common form of weather-related disasters and have a profound effect on human health and wellbeing.(1) Despite this, the demand for hospital inpatient resources after flooding disasters has not been well characterised. Literature also calls for more context specific research to implement individualised disaster preparation and response systems.(2)

On 28th February 2022, Lismore experienced it's worst recorded flood in over a century and was declared a natural disaster zone.(3)

Anecdotally there were reports of increased hospital admissions post-flood events and concerns of bed-block;(4) however, supporting scientific literature remains scarce. Given anticipated surges in extreme weather events attributed to climate change, further exploration is paramount.

Objective

To understand the effect of the 2022 February Lismore flood on adult hospital inpatient admissions in the month following the flood compared to that of a non-flood year.

Methodology

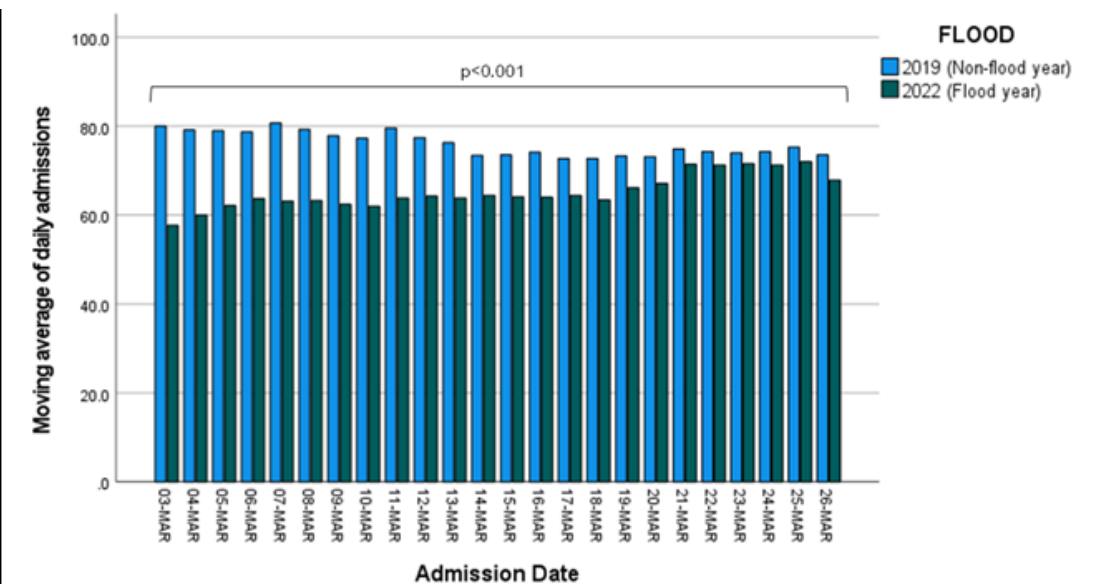
Medical record data was collected and analysed for a total of 4, 783 adult hospital inpatients from the 28th February to 29th March in both 2019 and 2022 at Lismore Base Hospital.

Analysis

Patient demographics, daily all-cause admissions, and daily and case-mixed admissions were compared using a Pearson Chi-Squared test. Means and moving averages were compared using independent t-tests. P-values of <0.05 were considered significant.

Table 1. Admission length of stay by attending specialty

Specialty	Average length of stay (days) (\bar{x} (SD))		Significance
	Year		
	28 th Feb 2019 – 29 th Mar 2019	28 th Feb 2022 – 29 th Mar 2022	
All-cause (total admission)	2.74*** (6.09)	3.86*** (8.59)	T-Test = -4.93 P-value <0.001
Gastroenterology and Hepatology	1.13* (3.51)	2.09* (4.36)	T-Test = -2.23 P-value = 0.026
Orthopaedic Surgery	2.88* (3.53)	4.76* (9.06)	T-Test = -2.28 P-value = 0.02
Respiratory and Sleep Medicine	3.77* (3.93)	7.89* (13.40)	T-Test = -2.29 P-value = 0.02
Urology	1.18*** (1.84)	2.97*** (4.96)	T-Test = -3.36 P-value <0.001



Graph 1. Centred 7-day moving average of daily inpatient admissions in the month following the Lismore flood as compared to the same month in a non-flood year

Results

It was found that total and daily hospital all-cause admissions decreased in the month following the flood, ($p < 0.001$) but that all-cause length of stay increased (+1.12 days, $p < 0.001$). The case mix showed significantly different ($p < 0.001$) proportions of admissions stratified by attending specialties, and four specialties had significant increases in average length of stay.

Conclusion

These results provide evidence of significant changes in inpatient hospital admissions after a flooding event, which may assist in disaster planning. Further analysis is ongoing to include ICU admissions, diagnoses, and mortality. Future flood-related health research requires longitudinal and context specific studies.

References

1. Saulnier DD, Ribacke KB and von Schreeb J. No calm after the storm: a systematic review of human health following flood and storm disasters. *Prehosp Disaster Med.* 2017; 32: 568-579.
2. Alderman K, Turner LR, Tong S. Floods and human health: a systematic review. *Environ Int.* 2012;47:37-47.
3. [Lismore City Council. Lismore Flood Heights](#), 2022, accessed 31/05/2023).
4. Herbert BR, E. Beds blocked and patients 'dumbfounded' as surgeries delayed by floods, pandemic. ABC, 07/04/2022.