

Prediction scores reliability during mass gathering events: our experience with two Papal visits.

Dott.ssa DANIELA ALBIERO (1), Dott. MAURIZIO MIGLIARI (1), Prof. GIACOMO BELLANI (2), Dott.ssa AIDA ANDREASSI (3), Dott. RICCARDO STUCCHI (4), Dott. ENZO ALBERGONI (3), Dott. MATTEO CARESANI (3), Dott. GIANLUCA CHIODINI (3), Prof. ROBERTO FUMAGALLI (4), Prof. GIUSEPPE FOTI (1)

(1) ASST Monza e Brianza, via Pergolesi 33, Monza, Mb, Italia.

(2) University of Milan Bicocca, via Cadore 48, Monza, Mb, Italia.

(3) Azienda Regionale Emergenza Urgenza, Piazza Ospedale Maggiore 3, Milano, Mi, Italia.

(4) ASST Grande Ospedale Metropolitano Niguarda, Piazza Ospedale Maggiore 3, Milano, Mi, Italia.

Argomento: Trauma e arresto cardiaco

Introduction: We aim to describe the observed medical events during two Papal visits (in 2012 and 2017) in the Milan area and compare them with those predicted by the commonly used Arbon score. Published values in the literature are in the range of 0,5-2 for patient-presentation-rate to medical services (PPR) and around 0.03 for transfer-to-hospital-rate (TTHR) both per 1.000 participants. To our knowledge, most of the existing scores have been applied to the events within 200.000 people. Furthermore, existing works are limited to a descriptive analysis of single events in different locations.

Methods: This is a retrospective analysis of data collected during two events in the Milan Area: the papal visit in April 2017 was located in Monza, an outdoor vast location. A similar location was used for the papal visit in June 2012, the Bresso airport. In both cases there were multiple access points for the public, escape routes with temporary fences and temporary scaffoldings were set up. Since it was a religious event, crowds was constituted mainly by families. It was estimated 400.000 participants in the 2017 and 450.000 in the 2012. Every medical event was recorded and PPR and TTHR calculated. Observed PPR and TTHR were compared with the expected calculated with Arbon regression model.

Results: The PPR was very similar for both events. In 2017 the TTHR was less than a half of that observed on 2012, likely due to different organization of the Medical Center. For both events, Arbon model underestimated patients presentations by 45% and 22%.

Conclusion: Current predictive models underestimate PPR in large mass religious events gathering 400.000 participants or more. Our data suggest that in these events a PPR of 0.6-0.8 can be expected and this estimate could be used to plan similar future events, while TTHR can vary widely.

EVENT	2012	2017
Estimated participants (approx)	450.000	400.000
Observed patient presentation	367	241
Observed PPR (per 1000 participants)	0,8	0,6
Predicted patient presentation (Arbon score)	202	189
Observed hospital transfer	62	19
Observed TTHR (per 1000 participants)	0,138	0,05