

## ABSTRACT

**Introduction:** Healthcare professionals working in the Emergency Medicine field are often required to function in difficult environments. Noise is one environmental factor that may adversely affect their performance.

**Objectives:** To firstly determine if there is any difference in cognitive task performance required for clinical decision-making of healthcare professionals in a quiet compared to a noisy environment and secondly, to assess the subjective experience of participants with regards to performance in a noisy environment.

**Design:** Prospective cross-over study.

**Setting:** Three Academic Hospitals in Johannesburg.

**Participants:** Forty one doctors exposed to emergency management of patients.

**Methods:** A 30 minute examination consisting of six matched and pre-validated questions was conducted. Half of the questions were completed with exposure to ambient noise (range 40-45dB(A)) and the other half with exposure to pre-recorded background Emergency Department noise at 80-85dB(A). The questions were completed in alternating quiet and noise. Each question was scored out of 10 and the time taken to complete each question was recorded.

**Main Results:** Overall mean test scores in quiet and noise were 18.7/30 and 19.4/30 ( $p=0.36$ ) respectively, with overall time for test completion of 836s in quiet and 797s ( $p=0.005$ ) in noise. While there was no statistically significant difference in task performance, 65% of the doctors found the noise distracting with 88% experiencing varying degrees of stress.

**Conclusions:** This study showed no difference in cognitive performance in a quiet compared to a noisy environment. Deterioration in functionality might be seen with higher levels of noise and/or longer exposure.