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Does loud noise affect the clinical decision-making processes of healthcare professionals in a simulated emergency setting?

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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.