African Diving and Hyperbaric Medicine

Methodological Evaluation of Public Health Surveillance Systems in Senegal: A Randomized Field Trial for Yield Improvement Assessment

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Abstract

Public health surveillance systems in Senegal are crucial for monitoring infectious diseases such as malaria and cholera. However, there is a need to evaluate their effectiveness and improve their operational efficiency. A randomized controlled trial was conducted among two regions, A and B. Region A received standard surveillance practices, while region B underwent enhanced surveillance procedures including improved training for field workers and better infrastructure. Data on disease incidence rates were collected over a six-month period to evaluate system performance. Region B demonstrated an improvement in yield of approximately 20% in reporting accurate data compared to Region A, with a significant reduction in delays from the standard 15 days to an average of 7 days for submitting surveillance reports. The statistical model indicates that this difference can be attributed to enhanced training and infrastructure ($Y = \beta 0 + \beta 1 X + \varepsilon$, where ε represents uncertainty in data collection). The randomized field trial confirmed the need for targeted interventions to improve public health surveillance systems, particularly through better training and infrastructure support. Public health authorities should prioritise continuous improvement of surveillance systems by investing in staff development and upgrading physical facilities. This will ensure timely and accurate data submission for effective disease control measures.

Keywords: *Sub-Saharan, surveillance, methodology, evaluation, randomized, trial, yield*

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