Etiologies of CABM and AMR patterns in Africa over the last 30 years: Systematic review

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Introduction

- Over 2.8 million people suffer form Bacterial Meningitis annually. Africa contributes 6/10 of the countries with the highest burden of disease.
- The burden of disease varies widely even in Africa with the meningitis belt having the highest burden and children are more disproportionally affected than adults.
- Streptococcus Pneumoniae, Haemophilus Influenza and Neisseria meningitidis are the leading cause of BM worldwide.
- Vaccination, improved diagnosis and treatment have led to marked reduction of incidence, mortality and morbidity of CABM globally.
- slow advancement of the above efforts, emergence of antimicrobial resistance and treatment guidelines, in hopes of better outcomes and less health disparities

Materials and Methods

- Using PRISMA guidelines of systematic reviews we searched pubmed and EMBASE using key terms bacterial meningitis in Africa.
- Inclusion criteria: Articles in English or French (1990-2019), Reported primary data on etiology of Bacterial meningitis, Case controls, cohort studies and cross-sectional studies.
- We excluded Expert opinions, letters to editor, editorials, narratives and case reports. Articles on mycobacteria tuberculosis and cryptococcal meningitis, Studies reporting only a single etiology, Nosocomial bacterial meningitis
- Data on study design, location, participant demographics, vaccination status if mentioned in the study or documented country status of vaccination at time of study, period of study, demographics used to confirm BM and any antimicrobial resistance information was collected.

Results

- 112972 articles of which 64 studies were analyzed, representing 43% of African countries [56-65].
- 118,716 people with suspected BM were assessed across the studies, with an organism identified in 34,593 (29%).
- In 53 studies with data on age, children made up 9506 cases (83%) of cases.
- S. pneumoniae (Spn) and Hib were the reported leading causes of CABM. The prevalence varied by region, with Spn being the most prevalent. An increased prevalence of Salmonella.
- Resistance was found to be highest against ampicillin (83%) of cases.
- continued high burden of disease in Africa.
- Vaccination has affected these etiologies and variation of etiology by regions of Africa, how etiologies of CABM have changed over the years.
- improved diagnosis and treatment have led to marked reduction of incidence, mortality and morbidity of CABM globally.
- continued high burden of disease in Africa.
- There remains a paucity of information on the true burden of CABM in Africa. It is imperative that we work to improve the diagnostic capabilities in Africa.

CONCLUSIONS

- Spn, Nmn, Hib are the leading causes of CABM in Africa. As in other continents the prevalence of Hib has reduced by over 50%.
- There was widespread resistance to ampicillin and gentamycin.
- There is a great need to regionally address antimicrobial resistance and treatment guidelines, in hopes of better outcomes and less health disparities

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Conflict of interest

- None declared.