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INTRODUCTION

- Pharmaceuticals and personal care products (PPCPs) produced are dispersed in the environment through many ways e.g., disposals at landfills.
- There is a potential for them being a real problem in aquatic systems.
- The surface sediments have a high capacity to accumulate PPCPs overtime.
- Yet research on this pollution problem is not adequately covered.
- The purpose of this study is to highlight the research that has been done and identify gaps that need to be bridged in further research.

MATERIALS AND METHODS

- Using databases e.g. Google Scholar, ResearchGate, Web of Science, and PubMed, a total of 110 papers (2012–2024) were found.
- Following PRISMA guidelines(Fig.1), studies that were not from Africa, were not sediment matrices, and duplicates were removed.

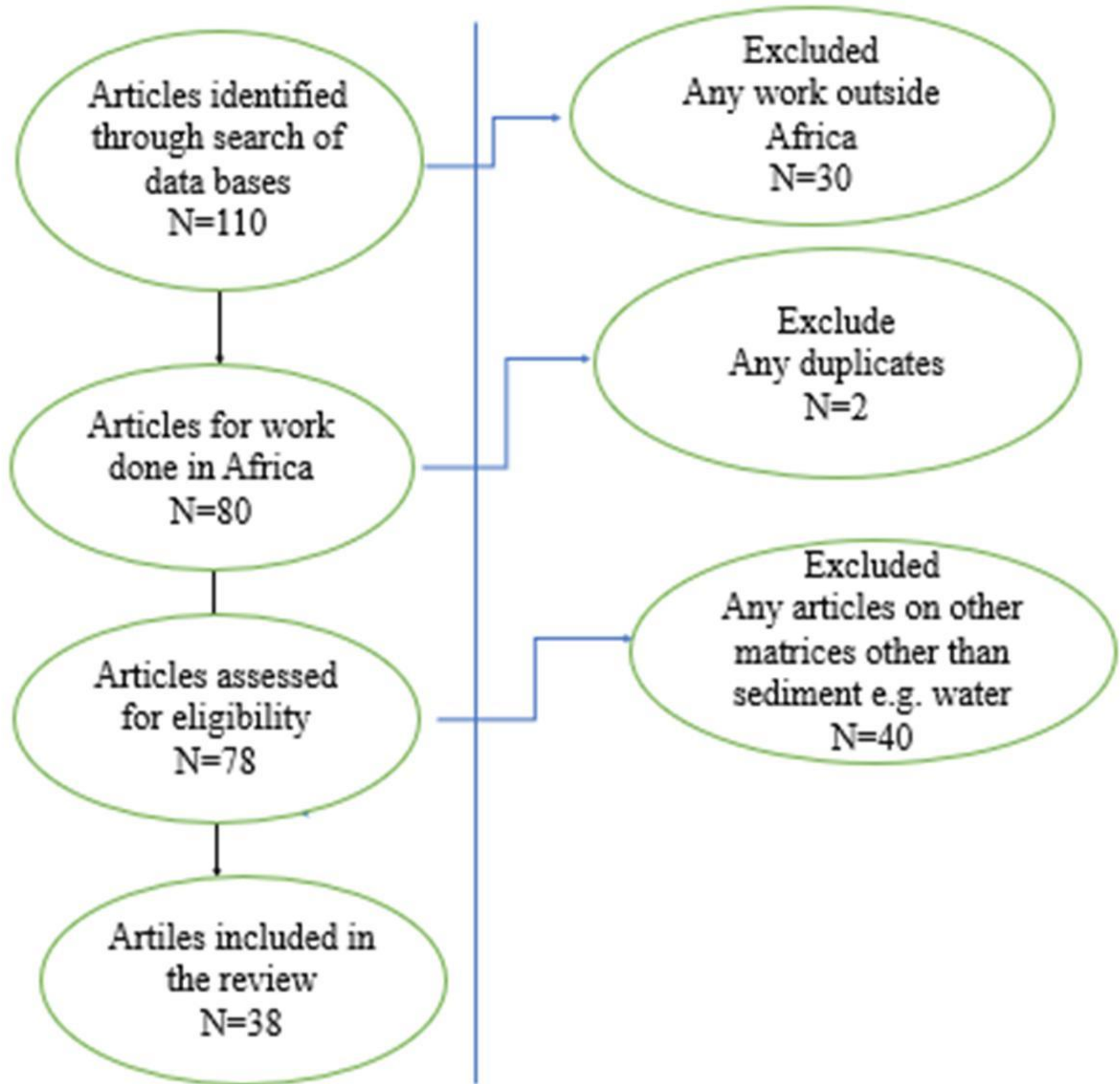


Fig. 1: PRISMA Criteria

RESULTS AND DISCUSSION

- PPCPs in aquatic sediments were only studied in seven countries: Uganda, Kenya, Ethiopia, Nigeria, Ghana, Tunisia, and South Africa (**Fig.2**).

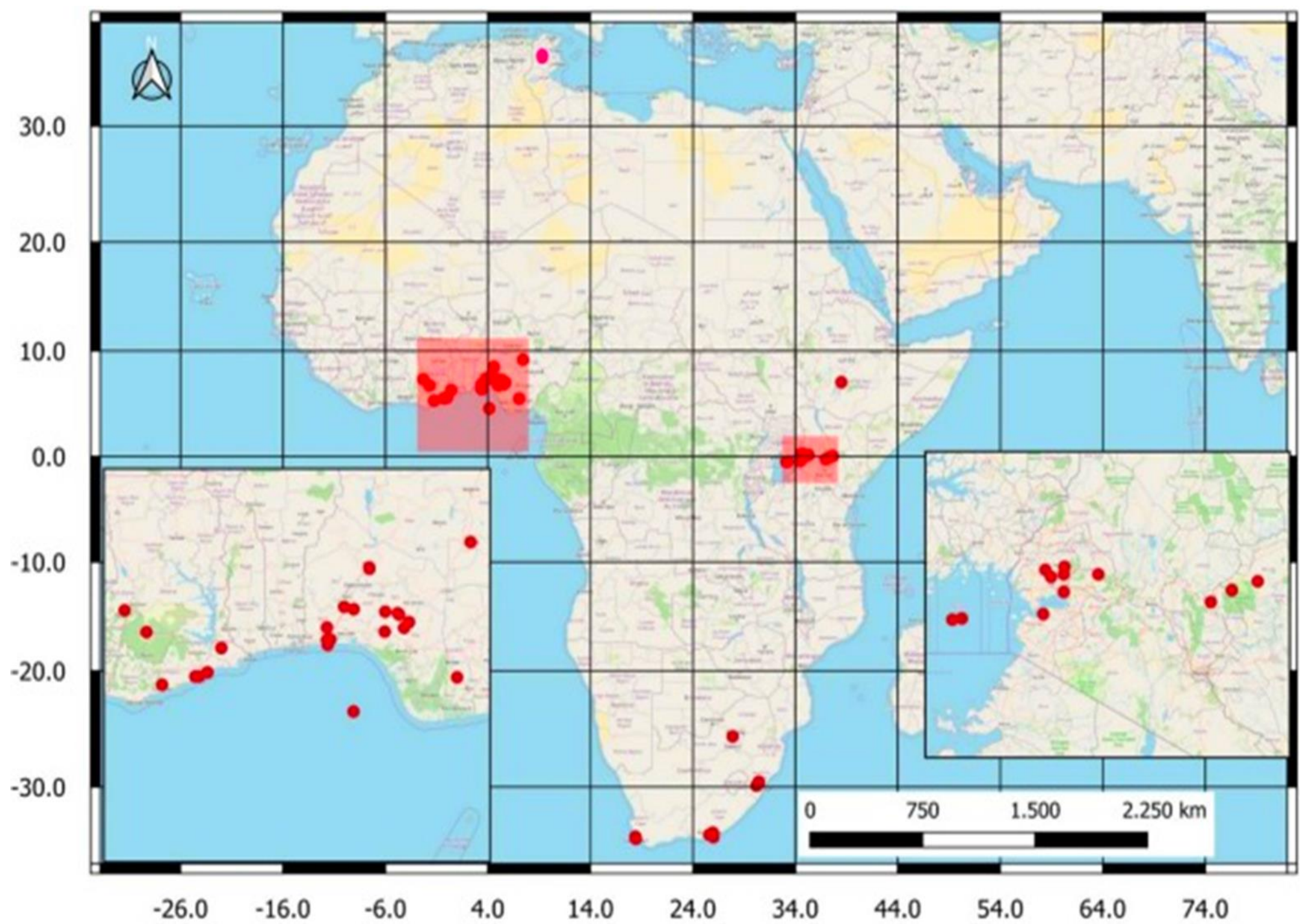


Fig. 2: Sampling areas for studies reviewed

- A total of 35 classes and 146 compounds of PPCPs were identified.
- Western Africa recorded the highest number of reported PPCPs (**Fig.3**).
- No study in Central Africa.

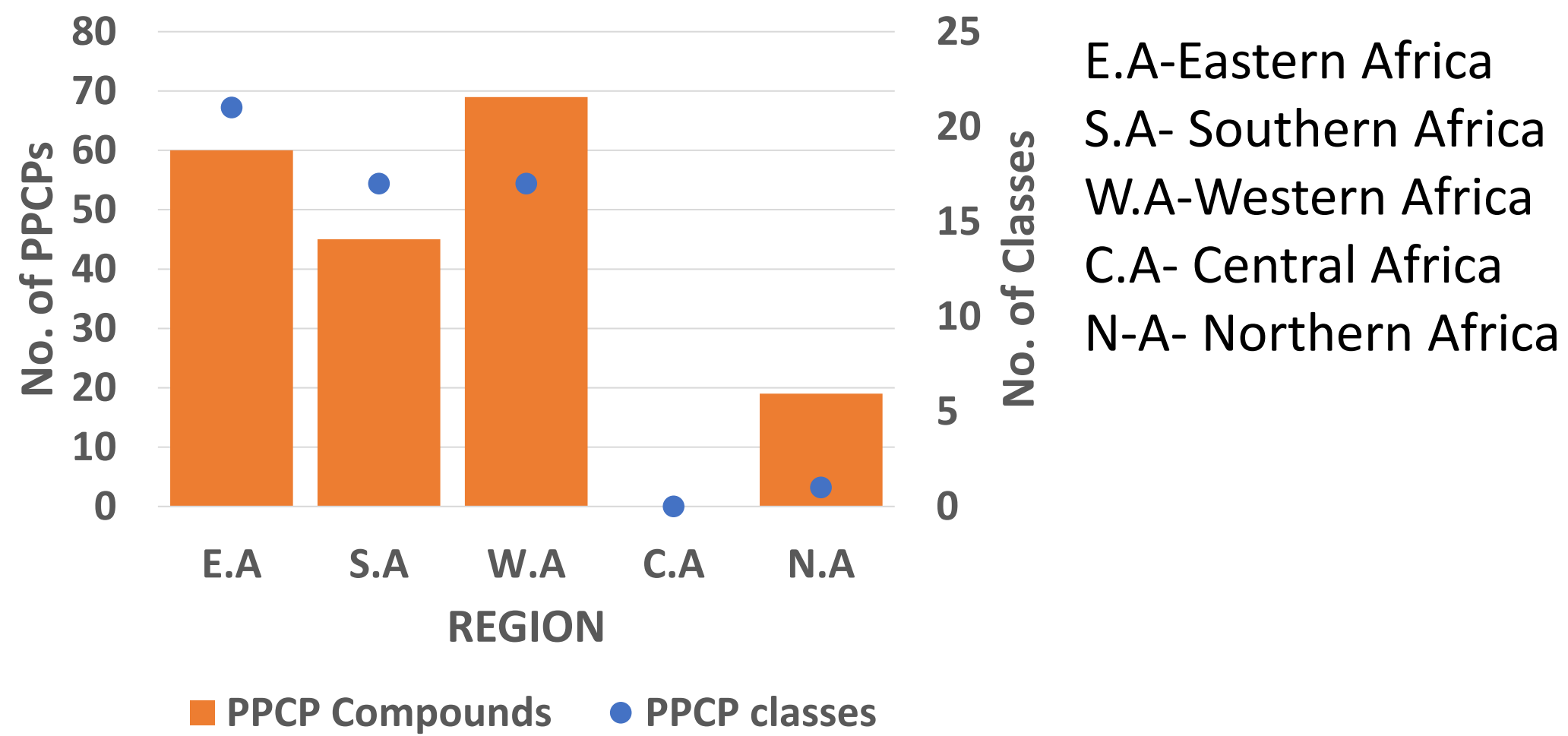


Fig. 3: PPCPs detected by region in sediments

- Concentrations of PPCPs were 3 orders of magnitude higher in Western Africa than Northern Africa (**Fig.4**) with some PPCP classes posing high risks to benthic organisms. Diclofenac being predominant.

- Highest concentrations were observed near wastewater treatment plants.

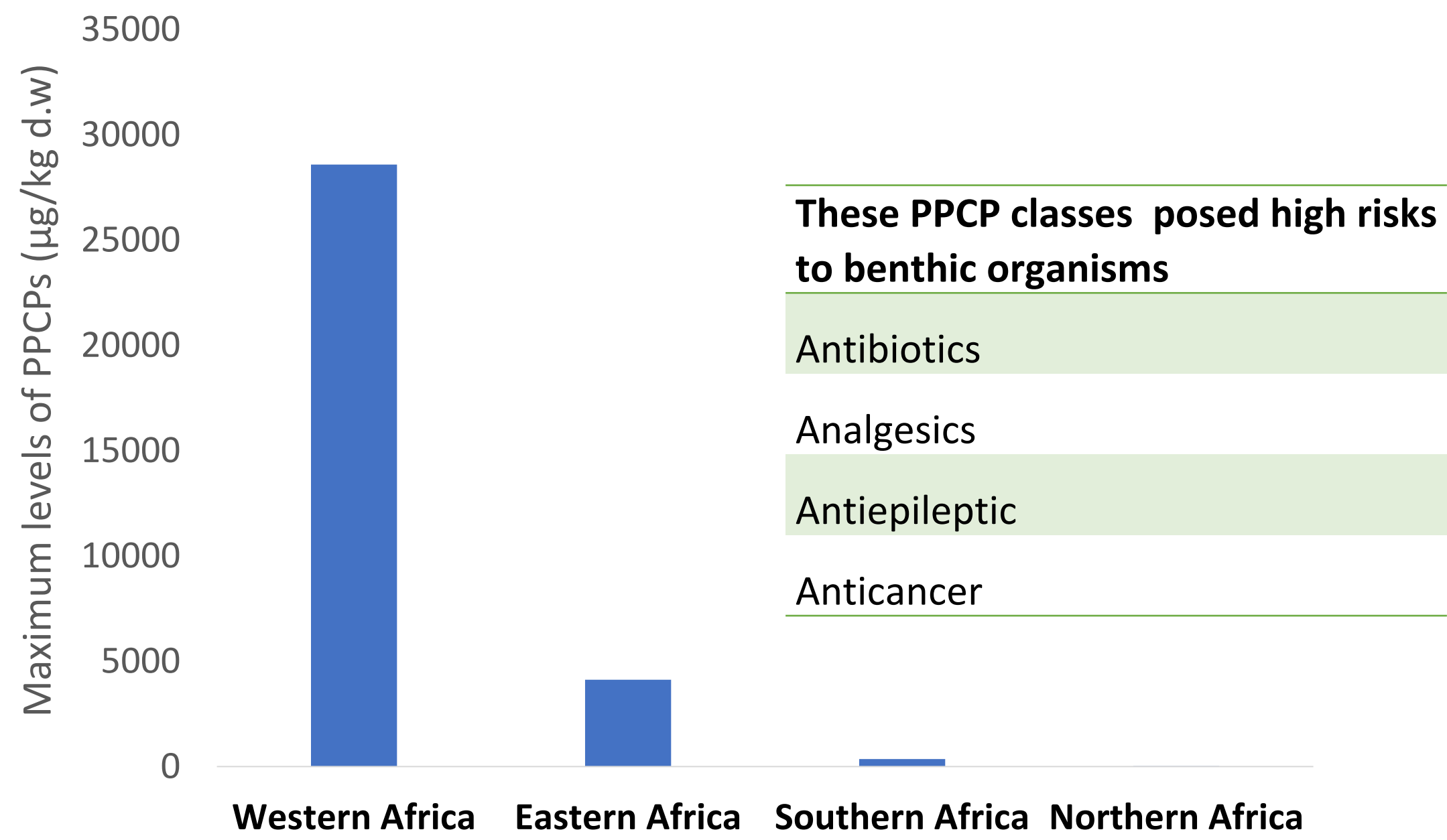


Fig.4: PPCPs in the sediments

- The reviewed work represent 7/56 countries. Only 4/39 countries that share Africa's vast coastline studied PPCPs coastal water sediments.
- Ultrasonic extraction coupled with Solid Phase Extraction (SPE) was the most frequently used sample preparation technique (Fig. 5)

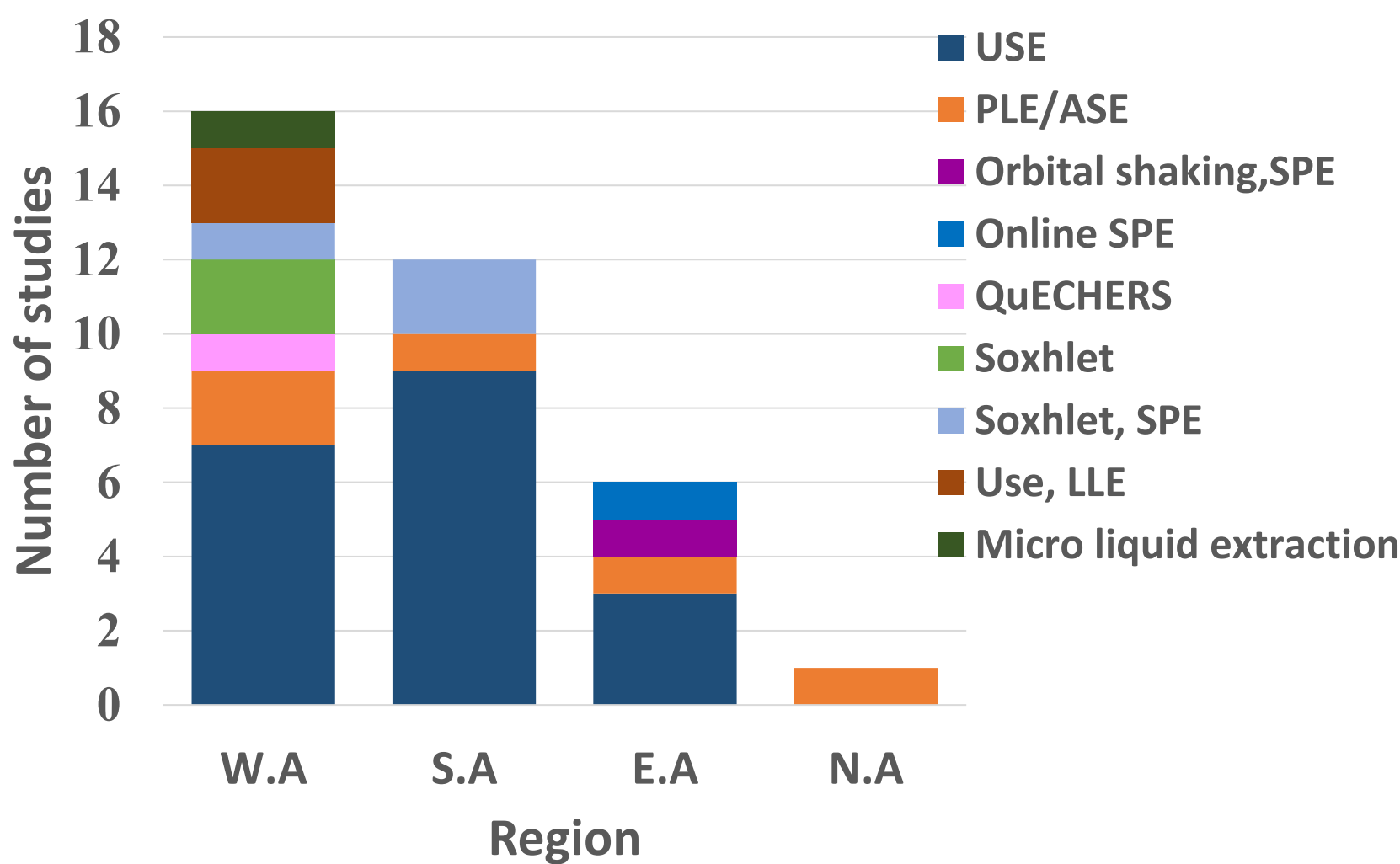


Fig.5: Sample prep. techniques

- The most frequently used analytical technique was LC-MS/MS due to its superior sensitivity, selectivity, and ability to detect PPCPs at trace levels.

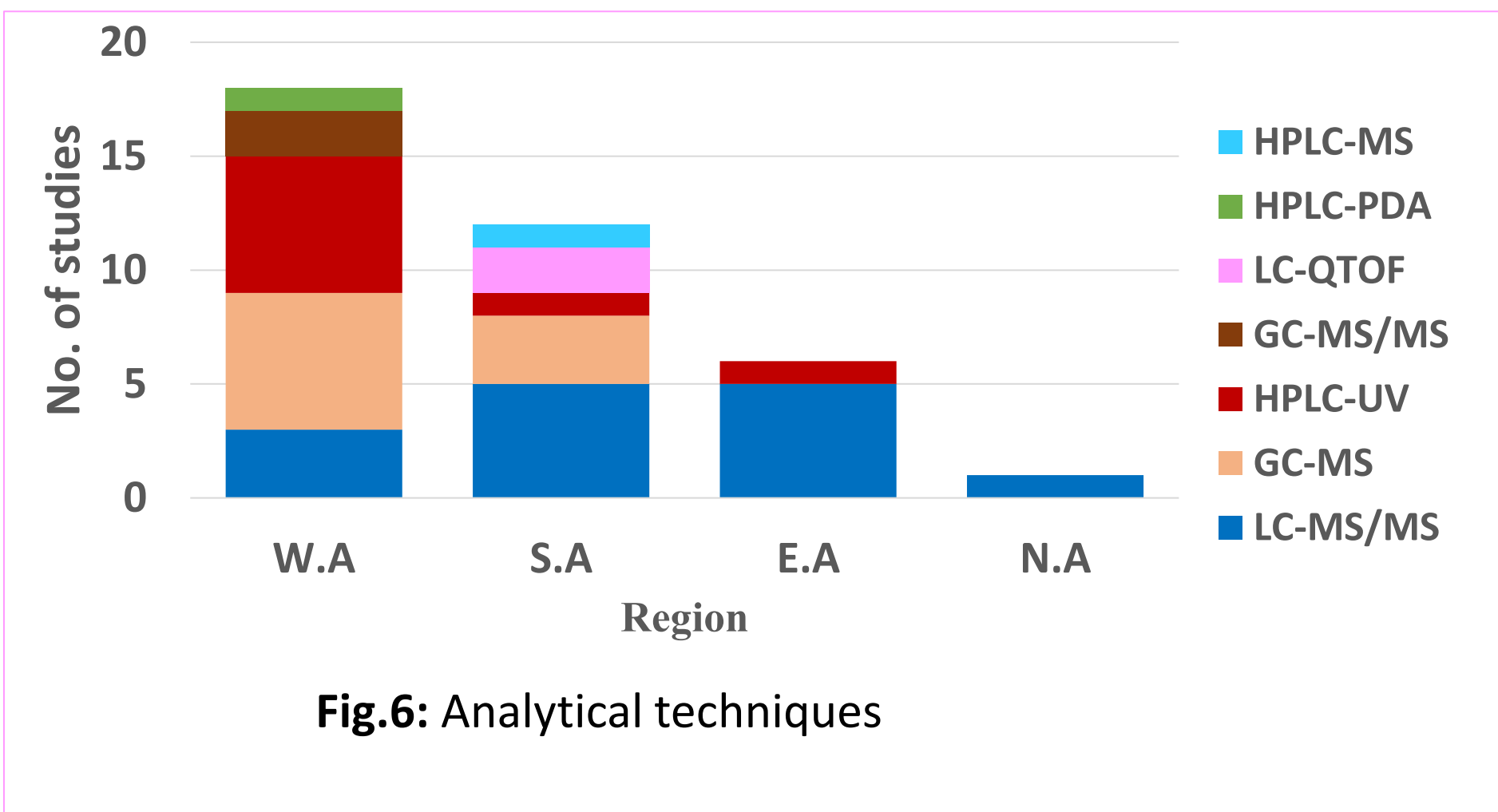


Fig.6: Analytical techniques

CONCLUSION

- Limited data exists on PPCPs in sediments from waterbodies in Africa.
- Ultrasonication coupled with SPE was the most used sample preparation technique.
- The common detection technique for PPCPs in sediments was LC-MS/MS.
- Effluents from WWTPs were the major sources of PPCPs.
- Risk quotient values suggest high ecological risks to sediment dwelling organisms.

CONTRIBUTION TO SDG

- This study aligns with SDGs 6 (Clean Water and Sanitation)

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