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Background

•The hightuberculosis (TB) burden in Nigeria, particularly in hard-to-reach and underserved areas, has called for innovative approaches to enhance case-finding. The portable digital X-ray (PDX) machines offer an opportunity to improve TB detection in regions with limited resources and access to more complex diagnostic tools.

•This paper presents the effectiveness of PDX machines in TB case-finding in Southwest, Nigeria.

Intervention

•This PDX intervention was carried out in purposively selected two (Oyo and Osun) States, Nigeria, from January 2022 to March 2024. The AI-enhanced Fujifilm's Xair and Delft Light Backpack PDX machines were deployed to screen the population of people in communities, schools, correctional centres and orphanages.

•Presumptives were evaluated using bacteriological laboratory tests and clinical radiology reviews. Data on screening coverage, presumptive TB identification, confirmed diagnoses and treatment initiation were collected and analysed.

Findings

• Overall, 98,863 people were screened within the implementing period (Fig1), and 52.57% of those screened were from Osun State. Although more females (57.51%) were screened, the males had a higher proportion (54.11%) of TB diagnosed (Fig2).

• Almost all clients screened were relatively distributed among those aged 5 to 65+ years; however, presumptive identification (23.6%) and case-finding (2.0%) were highest among those aged 65+.

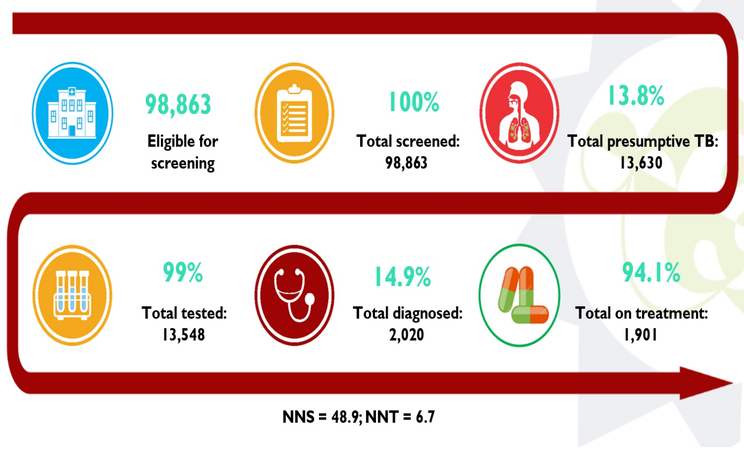
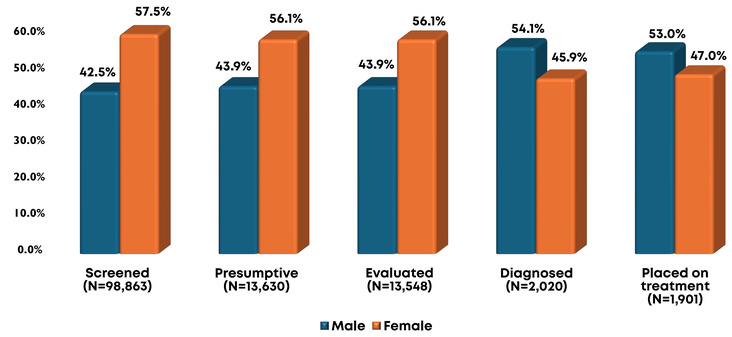


Fig 2: Gender Distribution of TB Cases



Conclusions

Implementing PDX machines significantly improved TB case identification and diagnoses in Osun and Oyo States. The machines effectively identified presumptive TB cases and enhanced TB diagnostic yield. Although AI-enhanced PDX machines have not shown effectiveness in this location as a diagnostic tool, the findings support that it should be adopted as a screening tool on a large scale, especially in resource-limited settings.

Keywords

Tuberculosis(TB), Portable Digita lX-ray (PDX), TB Case-finding, TB Diagnostic Yield.