

Use of mobile health (mHealth) technology to scale-up screening of school children for eye problems

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Abstract

Introduction: There is need for quick school screening methods because visits to schools is restricted to avoid disruption of learning and Kenya has shortage of eye care workers. From January 2016 to December 2018, Trans-Nzoia County implemented the Peek school eye health project with funding from Seeing is Believing through Operation Eyesight Universal. The objective of this study was to evaluate the performance of this project.

Methods: In February 2019, documents of this screening project were reviewed, and staff interviewed. The screening comprised of testing eyesight using mobile phones, sight simulation referral cards and short message service (SMS) to remind parents to take the children with eye problems for treatment. Primary school teachers were trained to screen all children in public primary school using this technology. They referred children with eye problems to hubs for triage. A hub was a either school or health facility in a defined zone with 3 to 4 neighbouring schools where the children who were identified to have eye problems were transported for confirmation of diagnosis and treatment by eye health outreach workers. The outreach workers were clinical officers, eye nurses and refractionist. Children who were diagnosed to have complex eye conditions were referred to Kitale County Referral Eye Unit for specialised treatment. The project provided free transport and eye medication for the children. Kitale County Referral Hospital management waived hospital fee for all the children referred from this project. Information from school screening was captured in the phones, stored in cloud and transmitted to a server at Kitale hospital. This mHealth network was used to track the children who were referred for eye examination and to send automatic follow-up SMS reminder for children who had not yet gone for treatment. Records of clinical examination by eye care workers was captured in Health Management Information System.

Findings: The government only permitted school screening to be conducted in January, February, May and July. It was not possible to conduct the screening on weekends because most of the schools were day schools. Twelve teachers were trained as screeners and one as coordinating itinerant teacher. The screeners screened all 168,730 children in public primary schools during the 3 years project period. They identified 6,657 (3.9%) children with eye conditions and each screener screened an average of 1,172 children per month. Eye health workers treated 6,200 children of the children identified to have eye problems and treatment coverage was 93.1%. The high adherence to referral was attributed to effective project coordination, automatic SMS reminders, free transport and subsidised cost of services. Creation of triage hubs relieved workload and reduced waiting time at the referral eye unit. A total of 1,450 (0.9%) children were prescribed spectacles and 43.0% of those who needed spectacles got them. Three hundred and five children had Low Vision and 224(73.4%) received low vision treatment.

Conclusions: mHealth enabled task-shifting of school screening from eye health workers to trained teachers. Screening of large number of children by teachers within a limited time period enhanced time-efficiency, minimised disruption of learning and relieved the workload of eye care workers. There was

shortage of spectacles. Processes of this project are well documented for to ease replication in other settings.