Strategy and Outcome of Large-Scale School and Community-Based Vision Care for Children

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Background: Most countries in the developing world have significant disparities in accessibility to paediatric eye care. The large number of children in need of eye care compared to available specialist eye care teams has informed the need to deploy different strategies to reach a large number of children for comprehensive, expert level vision care to ensure continuum of care from detection, referral, through treatment and rehabilitation.

The aim of this report is to provide a template of adaptable and scalable strategies for childhood blindness/visual impairment detection through management which was executed in six geopolitical zones of Nigeria. It specifically describes the outcome of large-scale school and community based comprehensive vision care program for children including those with special needs (blind, deaf or mentally challenged).

Methods: This report is a presentation of the strategies that were implemented in public schools in one of the 36 states of Nigeria and among children with special needs (blind, deaf or mentally challenged) in six states across the country - one from each of the six geopolitical zones.

The strategies included selection and training (physical or virtual or hybrid) of personnel; preparation and procurement of resources, advocacy, information management, logistics, task shifting, use of digital equipment and documentation during comprehensive eye evaluation of school children.

The key elements included the development of the following: standard operating procedures (SOP) and a checklist of all the vital equipment and documents. This were verified before and after every outreach. Screening was done through task-shifting to teachers and other volunteers who identified and documented referral of children who failed vision screening and the type of possible eye problems using TELVIS® kit. The kit incorporates pictures of eye problems in addition to visual acuity charts. Date and location of comprehensive eye evaluation were agreed and communicated during half day training for the teachers and volunteers.

High quality equipment with digital output display are preferable including tonometers, fundus camera, autorefractors, weighing scales, blood pressure/glucose monitors. Ready-made eye glasses of different powers were ordered and then fixed into frames ahead of the evaluation date, one-third redundancy for number expected are incorporated. Air and ground transportation arrangements were made ahead of the comprehensive eye evaluation. The project team members, equipments, other essential supplies, and the children who had been referred by the teachers/key informants were transported to the location of the comprehensive eye evaluation by the specialist eye care team members.

The comprehensive evaluations were done at readily accessible locations in the community/ school. Fewer children were transported to the location with the largest number of children. Direction of flow of the eye evaluation and vision

care were marked on appropriate surfaces (Figure 1). Eye care team members wore identification/ branded materials to help coordination of activities while onsite.

Schools/communities were given different times of the day for the evaluation for efficiency and crowd control. Volunteers who participated in screening were incorporated into organizing and documentation during comprehensive evaluation in schools/communities.

All the findings during the comprehensive evaluation and vision care were documented in a proforma. Health Support for teachers/volunteers was considered essential, and included eye examination, blood pressure check, weight, height for BMI calculation and random/blood sugar check and referral where necessary.

Results: Between March 2018 and April 2021, 141,434 children <16 years were enrolled for vision care using the strategies described. Altogether, 137,781 (97%) were in Kwara State: comprising 62,657 (17.5%) of 545,450 children in 242 (12.3%) of 3,316 conventional public primary schools and 75,124 who had vision screening done by 106 key informants in communities. The others were 3,653 (84%) of 4,335 children with special needs enrolled in the 52 schools for such children located in six Nigerian states.

Vision screening was done over a two-week period by 757 (2.9%) teachers in schools and/key informants in the communities using TELVIS® kits. Overall, 10,513 (7.4%) children and 3,121 teachers were referred for further evaluation.

About 9, 145 (86.9% of referrals) children and all 3,121 teachers presented at the various schools and communities for comprehensive eye examination by specialist eye care team.

Different eye care teams made up of an average of 8 members (2 ophthalmologists, 2 resident doctors, 2 nurses, 1 optometrist, 1 support staff) with a mix of critical skills to deliver child eye care supported by 6 school/community volunteers who provided the on-site school/community-based comprehensive eye evaluation (Figure-1) over a cumulative 23 days.

Among those who had vision screening, prevalence of refractive errors was found among 2.4% and

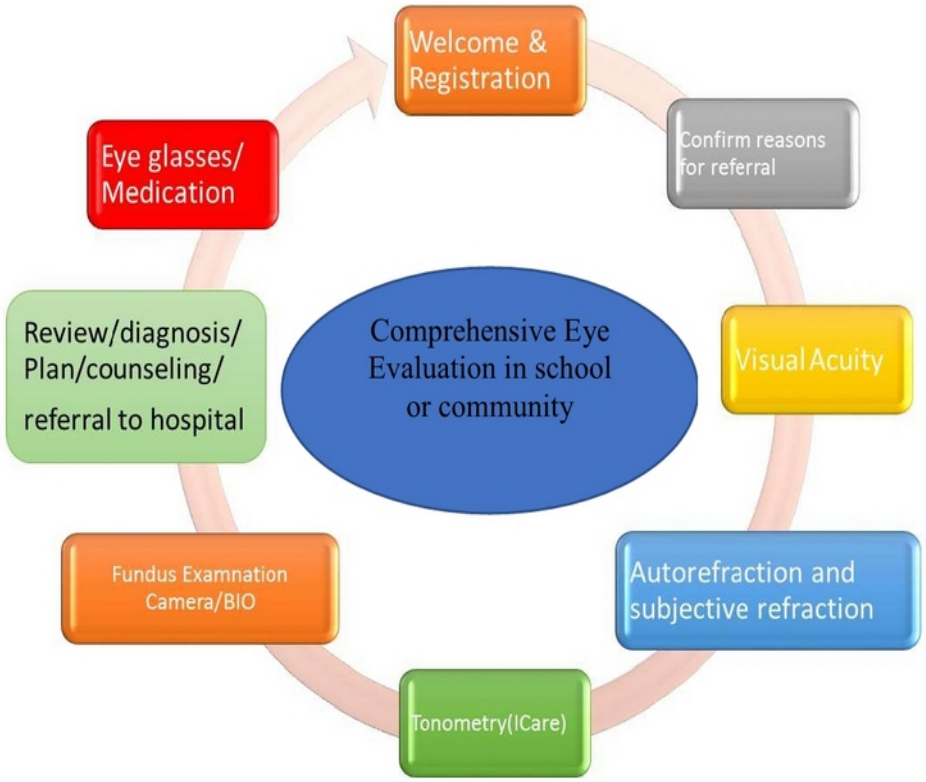

Figure 1: Typical flow of Comprehensive eye examination in schools and communities

3.1% rural and urban children in regular schools/ communities respectively. It was 6.3% among those with special needs. About 60% had same day on-site delivery of ready-made eye glasses and medical treatment mostly for vernal keratoconjunctivitis (48%) and ocular surface infections was provided during the onsite comprehensive eye evaluation.

Hospital referrals were made only for those conditions that required surgery and long-term care such as glaucoma-23%, ptosis-4.6%, cataract-3.5%, strabismus-5.4%. About 13% of referred children had normal eyes. High blood pressure was found in about 32% of teachers older than 40 years.

Conclusion: Accessible, scalable, timely, and cost-effective large scale vision care for children provided the much-needed child eye health promotion and services in our low-resourced settings. It used a strategy that was child eyecare focused, school/community based and anchored on task-shifting for vision screening, easy to use TELVIS kits, expert level comprehensive follow-up eye evaluation, with digital equipment, and good organization. It is therefore recommended for similar environments.

Keywords: *Community based, Strategies, Child eye services, Continuum of care, Task shifting.*

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