K4D | Knowledge, evidence and learning for development

Impact of childhood screening for disability/impairment on education and learning

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Question

What is the impact of childhood screening for disability/impairment on education and learning? What needs to be in place to ensure screening interventions are effective?

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1. Overview

Evidence indicates that disability is a leading cause of marginalisation in education, with enrolment, primary school completion and literacy rates consistently falling below those of non-disabled children, as children with disabilities are 'less likely to attend or remain in school, have lower transition and completion rates and do not achieve the levels of results of their peers' (Wapling, 2016, p. 3). They face many challenges in education, especially institutionalised discrimination, stigmatisation and neglect (GRM team, 2010, p. 181). In addition, poor vision and poor hearing, for instance, have been found to lead to poor education outcomes, as they may keep children away from school or interfere with learning (Boesen & Lykke, 2012, p. 117; Sightsavers et al, 2016, p. 18; Jose & Sachdeva, 2009, p. 205). WHO & the World Bank (2011, p. 221) suggest that 'early identification and intervention can reduce the level of educational support children with disabilities may require throughout their schooling and ensure they reach their full potential'.

A number of screening tools have been used in low and middle income countries, including in schools, to identify children at risk of disability and to direct them to appropriate help. However, as many children with disabilities are out of school, screening which takes place solely in schools may miss them. New and innovative screening technologies and tools are being developed, with the aim of overcoming some of the challenges faced in low and middle income countries. However, there appears to be very little evidence which looks at the impact of screening on education and learning outcomes of children with disabilities. A systematic review of education for children with disabilities in low and middle income finds that there is relatively little formal research which assesses strategies for ensuring quality education for children with disabilities, including in relation to impairment identification (Wapling, 2016, p. 3).

Key findings from the limited available evidence include:

Impact on educational and learning outcomes

- As poor vision and hearing, for example, can lead to poor educational outcomes, screening which uncovers these issues and leads to treatment, the provision of assistive devices, and inclusive teaching practices has in some cases been found to lead to improved educational outcomes in terms of attendance and student engagement of children with disabilities.
- Screening can lead to the treatment of preventable impairments.

Ensuring screening is effective

- Appropriate screening tools must be quick; low cost; acceptable to the community; easy to use by grass root level workers; and have high specificity and sensitivity (Robertson et al, 2012).
- It is important to ensure that identification through screening does not contribute to exclusion from education or other discrimination. Screening needs to result in appropriate follow up and support, and therefore should take into account the availability of services to support children with disabilities.
- Screening needs to be integrated into broader health and education programmes; teachers need to know how to include children with disabilities and provide them with good quality education, and parents and communities should be engaged.

2. Screening tools

Screening involves the use of diagnostic tools/equipment to test for different impairments, to identify those at risk and in need of more in-depth assessment, so that appropriate help can be offered (Kuyini et al, 2015, p. 19). Teachers can provide first line screening for some impairments, although this requires other systems to be in place to take over subsequent follow up processes, including links with education and social development services (Bundy, 2011, p. 119, 125).

In addition, Gottlieb et al's (2009, p. 1831) analysis 191199 children across 18 countries who had screened positively for, or at risk of, disability in the third round of UNICEF's Multiple Indicator Cluster Survey (2005–06) using the Ten Questions screen for disability, found that children aged 6–9 who did not attend school screened positive for disablity more often than did children attending school (29% vs 22%) in eight of 18 countries. This suggests that screening which takes place solely in school is likely to miss children with disabilities who are not attending school and that children with disabilities face barriers to attending school in comparison to other children in their communities (Gottlieb, 2009, p. 1838).

Tools used

Maulik & Darmstadt's (2007, p. S20) review of research into childhood disability in low- and middle-income countries found that the Ten Questions (TQ)[1] tool seemed to be the most widely used screening tool in community-based studies in low and middle income countries (see also Gottlieb et al, 2009, p. 1832; Bundy, 2011, p. 123). Studies on hearing impairment have often used the Liverpool Field Audiometer (Maulik & Darmstadt, 2007, p.S20). A range of different instruments[2] were found to have been used to assess intellectual disability[3] (Maulik & Darmstadt, 2007, p.S20). The E-test[4] was found to be a simple tool for identifying vision impairment in 32 developing countries (Maulik & Darmstadt, 2007, p. S6).

The TQ was found to be better at identifying more severe disabilities than milder disabilities, and those identified needed to undergo secondary testing to identify the precise nature of the disability (Maulik & Darmstadt, 2007, p. S21). Bundy (2011, p. 123) suggests that while the two phase approach to the TQ (screening and clinical assessments) is more expensive than a single phase TQ, it is 'still within a cost range that makes it an attractive instrument both for sample-based and population-based surveys'.

New and innovative technologies for screening hearing impairments, that are low-cost, easy to use, and automated have recently been developed, which help overcome some of the lack of equipment and expertise challenges of previous tools (Bright & Pallawela, 2016, p. 2). Bright & Pallawela (2016) carried out a review of available apps for ear and hearing assessments which

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[1] http://disabilitymeasures.org/tenquestions/TQ_MICS3_Child_Disablity_Module_English_2013-04-14.pdf

[2] These screening tools were generally standardised tools or adapted versions of the American Association on Mental Retardation Adaptive Behaviour Scale; the Vineland Adaptive Behaviour Scale; Griffith's Scale of Mental Development; or the Denver Development Screening Test (Maulik & Darmstadt, 2007, p. S6).

[3] Known as learning disability in the UK

[4] http://www.allaboutvision.com/eye-test/tumbling-e-chart.pdf

could be used for screening programme. The study found 30 different apps that could be used for ear and hearing assessments but that very few of the available apps have been validated in peer-reviewed studies[5], and that further independent research is required to fully understand their accuracy at detecting ear and hearing conditions (Bright & Pallawela, 2016, p. 1). As such they conclude that audiometry apps cannot be recommended to replace gold standard Pure Tone Audiometry (PTA) conducted by an audiologist, although they feel that the 'portability, accessibility, self-administration, and low-cost nature of ear and hearing apps still offer an exciting opportunity to overcome the key barriers to screening for ear and hearing conditions in low and middle income countries' (Bright & Pallawela, 2016, p. 6).

There has been increasing use of the UNICEF/Washington Group Child Functioning Module[6] to screen for children with disabilities. A study carried out in Fiji found that it 'appears to be a practical and effective tool that can be used by teachers to identify children at risk of disability', which is important to enable planning, monitoring and evaluating access to quality inclusive education (Sprunt et al, 2017).

3. Impact of screening on education and learning

A reflection on inclusive health and education policies suggests that, as screening children for vision and hearing problems is relatively simple, trained teachers could easily do it at the start of the school year (Meresman, 2015, p. 21). In doing this schools 'can resolve mild impairments immediately and refer more severe problems to health facilities' (Meresman, 2015, p. 21). Meresman (2015, p. 18) suggests that 'screening of young children for early detection of ear diseases and hearing loss should be conducted on school entry as part of the school health screening programme'. If children screen positively, they can be targeted for simple classroom measures to improve their progress in school (Meresman, 2015, p. 18).

Screening for hearing impairments in Cambodia identified treatable conditions such as ear infections or a build-up of ear wax (Meresman, 2015, p. 9). Immediate treatment of these conditions meant that more serious secondary infections and longer-term impairments were prevented (Meresman, 2015, p. 9).

A pilot study in Indonesia screened primary school children for vision and hearing impairments using a using a Snellen chart and hearing using distortion product otoacoustic emission (DPOAE), with those above a certain threshold referred to specialists for final testing (Boesen & Lykke, 2012, p. 114). These tools were selected because they are a 'thoroughly tested, cheap, and easy method that could be reproduced on a large scale', although they had their reservations about the suitability of the DPOAE (Boesen & Lykke, 2012, p. 115, 117). The more accurate the low cost screening stage is, the higher the efficiency of the more expensive secondary testing (Boesen & Lykke, 2012, p. 117). The majority of children found to be at risk of hearing disability had unimpaired hearing following the removal of cerumen and foreign bodies

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[5] See Bright & Pallawela (2016, p. 6) for a table showing the characteristics of the apps validated in peer-reviewed literature which include uHear, shoeBOX audiometry, EarTrumpet, CellScope, and AudCa.

[6] http://www.washingtongroup-disability.com/wp-content/uploads/2016/01/Child_Functioning_for_Children_Under_Age_5_Oct-2016_FINAL.pdf

(Boesen & Lykke, 2012, p. 116). Boesen & Lykke (2012, p. 115) concluded that identified pupils can, with simple adjustments, have access to education.

One recent programme which ran throughout 2016, the School Health Integrated Programming (SHIP), sought to implement vision screening programmes, as a part of integrated school health programmes in low resource settings, including Cambodia, Ethiopia, Ghana and Senegal. The goal was to reduce absenteeism and drop-out rates, and boost children's educational prospects.[7] For example, through the provision of glasses after a vision screening programme in Cambodia, children who had dropped out due to their vision problems could return to education (Meresman, 2015, p. 22). Teachers were trained to examine their students for major eye problems, and those with vision problems which could be corrected with glasses were given free ones, while other children were referred for treatment (Myers et al, 2016, p. 46).[8] More than 11,300 pupils were tested during the pilot project in Cambodia and teachers who were trained in 2012 continue to test children's eyesight every year (Myers, 2016, p. 46).

A Save the Children programme in Malawi introduced vision screening within the context of a comprehensive School Health and Nutrition (SHN) programming (Meresman, 2015, p. 22). 'Children reported that before screening they could not see the board well and often failed exams because they could not grasp the material' ((Meresman, 2015, p. 22). The programme led to teachers positioning the students at an appropriate distance from the board and the children reported that they could now follow classes and progress with their peers (Meresman, 2015, p. 22).

4. Ensuring screening is effective

Success criteria

Robertson et al (2012, p. 40) highlight a number of criteria found in the literature for appropriate screening tools in low and middle income countries – they must be: 'quick; low cost; acceptable to the community; easy to use by grass root level workers; and have high specificity and sensitivity as false positives are costly in terms of professional time and anxiety to families, and false negatives may impact on the child's health'.

Issues

Screening which results solely in a medical diagnosis is not the best way to ascertain level of disability in children because it does not take into account other factors contributing to disability (Maulik & Darmstadt, 2007, p. S21).

Many low and middle income countries lack the resources needed to develop a process whereby they generated new questions and performed extensive psychometric tests to assess reliability and validity (Maulik & Darmstadt, 2007, p. S21; Robertson et al, 2012, p. 46). However simply translating tools used elsewhere into the local language was found to fail to address cultural differences in expression of symptoms (Maulik & Darmstadt, 2007, p. S21).

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[7] https://www.sightsavers.org/programmes/school-health-integrated-programming/

[8] https://www.sightsavers.org/programmes/school-health-integrated-programming/

It is important to ensure that identification through screening does not contribute to exclusion from education or other discrimination faced by children with disabilities (WHO & UNICEF, 2012, p. 22). WHO & UNICEF (2012, p. 22) warn that ethical issues arise if screening does not lead to comprehensive assessment; the design of appropriate intervention plans; and timely and appropriate management and care. They suggest that the decision to undertake screening needs to take into account the availability of services to support children with disabilities or resources to provide interventions, as well as the effectiveness of these interventions (WHO & UNICEF, 2012, p. 22). Putting in place comprehensive tracking and follow-up systems can be a way to ensure that children who are identified through screening subsequently receive assessments and appropriate services (WHO & UNICEF, 2012, p. 22).

Screening tools based on reporting concerns about child *relative* development may be less effective due to variations in caregiver knowledge of 'normal' development or the spatial clustering of disability (Robertson et al, 2012, p. 45, 39). Accurate screening for intellectual disabilities for example, may be harder in contexts where disability is stigmatised and parents or guardians may be reluctant to say their child has a disability (Robertson et al, 2012, p. p. 39, 46). In some contexts, it has been suggested that there may be a tendency to 'to over-report problems in boys and under-report problems in girls due to a cultural preference for boys which leads to parents displaying more concern for the health of sons than daughters' (Robertson et al, 2012, p. p. 46).

Other factors contributing to screening's effectiveness

Screening should be integrated into broader programmes

Sightsavers, the Partnership for Child Development (Imperial College London), Brien Holden Vision Institute, the International Centre for Eye Health (London School of Hygiene and Tropical Medicine), the World Bank and the Global Partnership for Education used evidence and best practice to produce guidelines[9] which provide technical guidance on how to develop a more comprehensive and integrated approach to school eye health. The guidelines emphasise that school based eye health programmes should ideally engage Ministries of Health and Education, be integrated into the broader school health programme and must be backed up by eye and child health services to manage referrals (Sightsavers et al, 2016, p. 6). Locally affordable instruments and spectacles should be used (Sightsavers et al, 2016, p. 12).

In India, following a successful pilot in five districts, the School Eye Screening Programmes has become an integral part of the National Program for the Control of Blindness since 1994 (Jose & Sachdeva, 2009, p. 206). Teachers are trained and equipped to carry out screening for visual impairments (Jose & Sachdeva, 2009, p. 206). Initial screening is carried out with the Snellen's chart or the 'E' chart, which can be easily administered by minimally trained personnel, and which are a low cost, non-invasive, rapid, reliable and acceptable method (Jose & Sachdeva, 2009, p. 206). Agreements are made by District Health Society with one or more of the local opticians for supply of low cost quality spectacles to children who are identified as needing glasses and screening is not started if no arrangements for spectacles can be made (Jose & Sachdeva, 2009, p. 207). A review of the effectiveness of using teachers for screening for eye

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[9] https://webcache.googleusercontent.com/search?q=cache:VgdEDPE-z_4J:https://www.sightsavers.org/wp-content/uploads/2016/10/SHIP_School-Eye-Health-Guidelines_V3.pdf+&cd=1&hl=en&ct=clnk&gl=uk

disorders among children attending schools in Satna district of Madhya Pradesh, India, found that while primary vision screening by teachers had effectively reduced the workload of ophthalmic assistants, there were high false positive rates which raises the costs of the programme, so further training may be needed (Sudhan et al, 2009). In addition, there are concerns that the programme adds to teacher's workloads and takes them away from their teaching responsibilities (Sudhan et al, 2009).

Teachers need to be trained in inclusive educational methods

A systematic review looking at interventions in low and middle income countries in relation to children with disabilities found that where teachers received disability training, it tended to 'focus too much too much on the identification of impairments and not enough on what impact those impairments have on children's learning needs' (Wapling, 2016, p. 32). Teachers are not being provided with enough detailed information on what they can do to change the way they teach and organise their classrooms in order to accommodate different learning needs (Wapling, 2016, p. 32). Being able to screen for disabilities 'does not necessarily translate into adapted classroom practice or an ability to provide differentiated curricula and learning opportunities' (Howgego et al, 2014, p. 25). In order to succeed in school, children with disabilities mostly need a good-quality responsive education (Croft, 2013, p. 240).

Parents and the community should understand the screening programme

It is important to communicate with parents, community leaders, religious leaders and local health agents about the objectives of the programme, which can help ensure good turn out on screening and treatment days (Sightsavers et al, 2016, p. 14). Also parents, children and students should be made aware that non-enrolled children are welcome to come along to be screened on specific days (Sightsavers et al, 2016, p. 14).

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