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Evaluation of primary eye care services for children in the Ashanti region of Ghana

Authors:
Elizabeth M. Akpakli[1]
Alvin J. Munsamy[1]
Nishanee Rampersad[1]

Affiliations:
[1]Discipline of Optometry, School of Health Sciences, University of KwaZulu-Natal, Durban, South Africa

Corresponding author:
Elizabeth Akpakli,
bethmanasco@yahoo.com

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Background: One of the strategies to improve access to eye care services in low- and middle-income countries (LMICs) is to integrate such services into primary health care (PHC). This can be achieved by implementing sustainable and equitable services across all levels of the health care system.

Aim: This study assessed the provision of primary eye care services among children in the Ashanti region of Ghana from the perspective of district health directors.

Setting: This study was done in the Ashanti region of Ghana.

Methods: A purposive sampling technique was employed to select 10 district health directors for a one-on-one interview guided by the eye care service assessment tool (ECSAT). It focused on the provision of primary eye care services, current policies and programmes and efforts to support integration of eye care services for children into the PHC system.

Results: The district health information management system (DHIM) was the major source of information on child eye health. Basic eye care services were available and covered by the national health insurance scheme (NHIS). School screenings and outreach programmes were organised for underserved communities. There were limited resources and knowledge on diagnostic and treatment procedures.

Conclusion: To address the gaps, policymakers and stakeholders should prioritise the development of sustainable and equitable eye care strategies.

Contribution: This study is the first in Ghana to comprehensively assess eye care services among children from the perspectives of district health directors. It provides findings to guide policy formulation and clinical practice for quality primary-level eye care services for children.

Keywords: primary eye care services; children; ECSAT; Ashanti region; qualitative study.

Introduction

The VISION 2020: Right to Sight programme aimed to identify strategies for countries to improve access to quality eye services.[1] Its primary focus areas included disease control, human resource development and improvement of infrastructure and technology aimed at eliminating vision impairment. However, current estimates suggest that at least one billion people globally have vision impairment that could have been prevented or is yet to be addressed.[2] The persistence of avoidable vision impairment globally suggests that the objective remains critical to public health. A priority goal of the World Health Organization (WHO) is to alleviate childhood blindness, particularly in developing countries, where many live in poverty exacerbating poor health outcomes.[3] Alleviating childhood blindness can be achieved by implementing sustainable and equitable services across all levels of the health care system.[4] The development of such intervention programmes depends on reliable data. One way to improve access to eye care services in low- and middle-income countries (LMICs) is to integrate eye care into primary health care (PHC), which is advocated in the WHO report 'Universal Eye Health: Global Action Plan 2014–2019'.[5] The elements in primary eye care (PEC) include health protection, health promotion, specific preventive measures, detection and treatment of common eye conditions, detection and referral of complex conditions and record keeping.[6] However, the health promotion element can be effectively delivered in the community as well as in facilities, while the other elements principally take place in PHC facilities.[7] In 2002, the WHO identified 10 evidence-based primary care key activities for healthy eyes in children. These interventions include vitamin A supplementation and measles

Note: Additional supporting information may be found in the online version of this article as Online Appendix 1.

immunisation as well as ophthalmic prophylaxis of the newborn and early screening for cataract.[8] The WHO, therefore, recommended that these activities be included in primary-level child health services and national prevention of blindness plans. However, globally, some of the ophthalmic components have not been included in child health programmes.[8]

Health promotion requires a holistic approach involving empowerment of individuals and communities, intersectoral action and health system strengthening.[9] In Ghana, the health service delivery is broadly organised into three levels as primary, secondary and tertiary, and has pluralistic service providers consisting of public, private, traditional and alternative service providers.[10] In 2012, a review showed that 50% of all eye conditions diagnosed, mainly conjunctivitis and refractive errors, could be managed at the primary level by adequately trained and equipped eye health workers.[11] Therefore, integrating PEC into existing PHC services would facilitate access to more equitable, effective, accessible and affordable eye care services, particularly for children in the rural communities.[12] Since 2004, the Ministry of Health has been implementing activities to reduce the prevalence of avoidable blindness and increase coverage of eye health service delivery through the strengthening of national, regional and district capacities to ensure available, accessible, affordable and acceptable eye health to all people.[12] Furthermore, there have been efforts to mobilise communities to participate actively in eye health programme. However, in Ghana, PEC is yet to be integrated into the primary health system at the sub-district level (which includes health centres and community health planning and services [CHPS] system) adopted as a national primary health policy by the Ministry of Health and the Ghana Health Service.[13]

In order to improve the provision of eye care services, a comprehensive understanding of the barriers is required. Overcoming barriers that hinder access to eye care services is essential to avert the burden of avoidable blindness.[14] Therefore, the objective of the study was to investigate the provision of PEC services for children in the Ashanti region of Ghana, as perceived by municipal and district health directors. In this regard, the study will provide reliable data that can be used towards the development of a model of care that has the potential to guide policy formulation and clinical practice for quality primary-level eye care services for children.

Research methods and design

Study design and population

The study used a cross-sectional and qualitative approach. The Ashanti region has 43 municipal and district health directors that provide supervision, technical and management support to champion the implementation of health policies and programmes in the districts and sub-districts within the region. As the body responsible for health services in the region, the health directorate maintains close links with all other agencies such as the Ministry of Health, the local government system, traditional authorities and other stakeholders in health, including development partners and civil society in the region. The study population comprised all 43 municipal and district health directors. The district and municipal health directors were selected using purposive sampling. Purposive sampling allows for the selection of participants who are best suited to contribute to the research project because of their experience, characteristics and knowledge.[15] This targeted approach ensured that the data collected were rich and directly pertinent to the study objectives, leading to more meaningful and focused findings. A total of 10 district and municipal health directors were interviewed.

Data collection

One-on-one interviews were conducted with selected participants to explore the provision of PEC services and current policies and programmes. The interviews also focused on future efforts to better support the integration and implementation of PEC services for children into the PHC system. The interviews were conducted using an interview guide adopted from the eye care service assessment tool (ECSAT).[16] The ECSAT was developed by the WHO and aimed at national health policy makers and planners, staff in other national planning bodies and partners in health development agencies. This tool was designed to identify and address possible gaps across the eye care sector and to identify priority areas that need to be addressed in strategic planning. The questions in the ECSAT interview guide (Online Appendix 1) covered a range of themes including:

1. Evidence for advocacy and awareness creation, which sought information on sources of data, plans for epidemiological surveys on childhood visual impairment (VI) and blindness, advocacy for child eye health care, identification of underserved communities and activities intended to advance public and government awareness on child health care.
2. Enhancing comprehensive eye care services through the WHO health system approach that sought information on the level of eye care services currently provided and the number and distribution of eye care professionals in the district. Furthermore, information regarding access to eye care services was also probed.
3. Multisectoral engagement and partnerships where information on non-governmental organisations that were actively engaged in eye health and the prevention of VI for children.

All interviews were conducted in English by the principal researcher and audio-recorded after obtaining verbal permission from the participants. The interviews, conducted using Zoom or via telephone, were scheduled at a date and time that was convenient for the participant

based on their availability. The choice of using Zoom and telephone for the meeting was because of geographical distance and inability to agree on meeting time as a result of busy schedules. On average, the interviews lasted for 20 min. Participants were assigned unique identification numbers to aid in the process of data analysis and for anonymity. During the analysis of the interview data, the principal researcher reviewed the transcripts to identify the emerging codes and themes. Initially, the interview recordings were transcribed and the data were cleaned. The data were coded manually, and the codes were organised under themes. The themes were then interpreted. The interview data were analysed concurrently during data collection to create an audit trail and better document the point of data saturation (if applicable).

Quality assurance

The validity of the interview findings was ensured through careful and purposive selection of key municipal and district health directors. Furthermore, dependability was ensured by piloting the interview guide on 10 municipal and district health directors that were not part of the final study sample. The study also used member checking to review interview transcripts and verify interpretations during data analysis. Furthermore, the study used a validated standardised tool (ECSAT) that has been used previously in Bangladesh[17] to assess eye care services. Reliability was also checked by ensuring that errors did not occur during transcription by reviewing the audiotaped interviews and comparing it to the final transcripts.

Ethical considerations

Approval for the study was obtained from the Humanities and Social Sciences Research Ethics Committee (HSSREC), University of KwaZulu-Natal (reference no.: HSSREC/00004574/2022) and the Committee on Human Research and Publication Ethics (CHRPE), KNUST (reference no.: CHRPE/AP/771/22). Gatekeeper permission was also sought from the regional health directorate and the heads of the selected health facilities. Participation in the study was voluntary at every level, and there were no monetary or other inducements.

Analysis and interpretation of interview data

The semi-structured interviews were transcribed, coded and analysed using thematic content analysis. The themes and sub-themes that emerged from the interviews are presented in Table 1.

Results

Interviews were conducted with 10 participants, of whom four were females and six were males. Nine participants were district health directors, while the remaining one was a municipal health director. This is represented in Table 2.

TABLE 1: Themes and sub-themes.

Themes	Sub-themes
1. Evidence for advocacy and awareness creation	1.1. Information on prevalence and causes of visual impairment in children. 1.2. Approaches to compensate for lack of specialised eye care services. 1.3. Resources for the provision of eye care services in children. 1.4. Activities to promote child eye health.
2. Enhancing comprehensive eye care services through the WHO health system approach	2.1. Knowledge and implementation of service provision guidelines. 2.2. Leadership, knowledge of eye staff and management of resources. 2.3. Variation in the availability and level of provision of child eye care services. 2.4. Affordability and coverage of child eye care services by the national health insurance scheme (NHIS).
3. Multisectoral engagements	3.1. Involvement of NGOs in child eye health initiatives

NGO, non-governmental organisation; WHO, World Health Organization.

TABLE 2: Demographic characteristics of participants.

Variable	Frequency (*n*)	Percentage (%)
Gender		
Male	6	60.00
Female	4	40.00
Administration		
District	9	90.00
Municipal	1	10.00

Theme 1: Evidence for advocacy and awareness creation

Information on prevalence and causes of visual impairment in children

Overall, participants provided varying responses when asked about information on the prevalence and causes of VI in children. Some participants ($n = 4$) stated that they received such information on monthly basis, and it is reported on a platform called DHIMS (district health management system). For example, 'You know because of DHIMS, every month on the DHIMS we have a format that reports on eye care (services)' (Participant 2, district health director, male). Other sources of information mentioned by participants were school health reports and consulting room registers. For instance, 'The monthly school visits report or school health report when such a visit is conducted' (Participant 3, district health director, male). Another participant also indicated, 'The source document is the consulting room register' (Participant 1, district health director, male). Two participants mentioned that their directorate only received such information quarterly as this coincides with their facility performance review. However, four participants indicated that they do not receive any information on eye care in children and attributed this to lack of personnel and eye care services for the general population in their district. For instance, he stated, 'No, we have not gotten that report, as the situation in the district is that we do not provide eye services' (Participant 1, district health director, male). When asked about what these data are used for, some participants ($n = 4$) explained that it is used to strengthen child eye care services through community sensitisation and health education programmes. For example, 'We realize that we have a lot of children reporting, then it would mean that you would have to strengthen eye care (for children) within the district'

(Participant 1, district health director, male). Three participants indicated that such data would be used to inform policy and planning. This was narrated, 'We use it (information on prevalence and causes of VI in children) to plan for training and capacity building for staff' (Participant 5, district health director, male). Other participants also mentioned that the data were used for follow-up of complex eye conditions. For instance, 'Usually, when we get such reports, we follow (to ensure) that continuity of care is provided' (Participant 3, district health director, male). Two participants mentioned that there were no plans in place for the use of the information received because attention had not been paid to eye care in children. This was explained by one of the participants, 'No, I have not utilized that information with regards to children (as) no attention has been paid to the information in the report' (Participant 7, district health director, male).

Approaches to compensate for lack of specialised eye care services

When asked how communities with underserved eye care services are identified and assisted, participants mentioned that strategies such as organisation of community outreach activities (n = 3), treatment of basic eye conditions by other (non-eye care) staff (n = 3), referral of complex conditions (n = 5) and school screening programmes (n = 5) are currently being done. For instance, 'The community nurses are able to pick the basic ones (eye conditions) and refer as quickly as possible' (Participant 2, district health director, male). In addition, one of the participants revealed that to help upgrade the knowledge of the community nurses specifically in eye care, they received training by ORBIS (a non-governmental organisation [NGO]) to treat basic eye conditions. He narrated:

> 'ORBIS trained 50 community nurses in eye care and these community nurses [*were*] trained in two different batches. When we were selecting these nurses, we made sure we selected [*nurses*] from each zone so that during outreach services they have the knowledge and skills.' (Participant 2, district health director, male)

Another participant also stated, 'So we do the health screening and then there is school health (programs)' (Participant 10, municipal health director, female). Further, it was explained by one of the participants that an eye care professional had been engaged on a part-time basis to provide eye care services regularly in the district. He explained, 'So there is the locum (visiting professional), because we were not providing the services and we decided to get the locum' (Participant 1, district health director, male). A noteworthy observation was that of poor road infrastructure being a major challenge that prevented plans to reach out and provide eye health programmes to communities that are underserved. For example:

> 'So, most of our road networks are very bad. So, in fact it is very difficult for them (nurses) to reach them (community members) in terms of these eye care and health program.' (Participant 3, district health director, male)

Resources for the provision of eye care services in children

When asked about the resources allocated for eye care services in children, half of the participants (n = 5) indicated that there were no available resources for eye care services in their districts. This was explained, 'Currently we do not have resources available' (Participant 3, district health director, male). To compensate for unavailable resources in the directorate, two participants mentioned that sponsors had been engaged to help provide free eye care services for the communities. This was expressed by one participant, 'However, partners that we come across we engage with them, and when we are lucky, we partner with them' (Participant 5, district health director, male). During such sponsored programmes, free services and items such as spectacles and medications were provided to the community members. For instance, 'As I speak with you, we have some lenses (that) some people have donated and these will be given to community members including children that need them' (Participant 3, district health director, male). Further, three participants explained that they do not allocate specific resources for eye care services in children alone because their budget is prepared considering all health services for the entire population. For example, 'The budget is the composite one, including everything so sometimes you cannot tell exactly the amount (for eye care services)' (Participant 3, district health director, male). Contrarily, two participants mentioned that they allocated about 1% of the general budget for eye care services. This was expressed by one of the participants, 'Actually, I cannot get that figure for you off head. Percentage wise, I think it will be about 1%' (Participant 4, district health director, female). Lack of eye care professionals (n = 3), lack of logistics (n = 4), lack of accessible eye services (n = 2) and unavailability of eye medications (n = 3) were recognised needs that the participants identified for the provision of child eye care services. For instance:

> 'We have looked at the needs of eye care to the general public which includes, the children. The first one [*factor*] is the medication and then second, the equipment [*needed for provision of these services*].' (Participant 9, district health director, male)

Additionally, a district health director indicated, 'Yeah, it has to do with putting lack of eye care professionals' (Participant 1, district health director, male). Furthermore, poor perceptions about eye health among the community members were also mentioned. For example, 'What I would say is that most of the parents when they have the newborns and they have eye problems, they lose hope, so, I think our mindset should change' (Participant 4, district health director, female). One of the participants further explained how these services were limited as they were only being provided at a specific level of care, making them sometimes inaccessible, 'It is only the government hospital that is providing the services. If the services are extended to at least the health centers at the various communities, accessibility becomes more' (Participant 10, municipal health director, female).

Activities to promote child eye health

Participants stated that different activities were currently being used to promote eye health in children like eye health education programmes, community outreach programmes, school health programmes and training of community health nurses (CHNs). Most of the participants (n = 6) stated that health education and community sensitisation programmes are organised to create awareness about eye care in children. For instance:

> 'We advise them, educate them [*and provide*] some kind of sensitization on how to report any defects [*like*] if your child comes home and complains that I cannot see, then it means that particular child needs support.' (Participant 3, district health director, male)

Four participants also indicated that the major focus during school health programmes was to educate school children on the need for early detection and treatment of eye problems. He explained:

> 'Just recently we told them to screen schools because some of them [*school children*] they have some defects which can be corrected.' (Participant 3, district health director, male)

Participants (n = 2) further stated that children with eye conditions detected during community outreaches are referred to the nearest facility for proper management. For instance, 'The community health nurses examining the children (if they) suspect or detect any problems, they refer such clients for further care' (Participant 5, district health director, male). In addition, one participant indicated that eye health for children in his district was promoted by developing and empowering staff to gain further education and training related to eye and by procuring specific eye medication and equipment. For example, 'Alright, one is the sponsorship of nurses to pursue ophthalmology (training). Then is procurement of equipment for ophthalmic care and medications' (Participant 9, district health director, male).

Theme 2: Enhancing comprehensive eye care services through the World Health Organization health system approach

Knowledge and implementation of service provision guidelines

Most of the participants (n = 8) had limited knowledge on the diagnostic and treatment procedures specifically for children. For instance, 'I do not have much insight on the list (for diagnostic and treatment) that you are talking about' (Participant 5, district health director, male). However, it was encouraging to note that two participants mentioned that the 2023 standard treatment guideline was currently being used as management protocols for children in primary care establishments. For example, 'Yes, the 2023 standard treatment guidelines with all those procedures and guidelines have been clearly stated in it' (Participant 10, district health director, female). The application of antibiotics (n = 5) and eye screening at birth (n = 2) were government-endorsed policies that were listed by participants as being implemented for infants at birth. This was expressed by one of the participants, 'So, when a new child is born, I think they give chloramphenicol (an antibiotic eyedrop)' (Participant 10, district health director, female). Another participant also stated that, 'We also check the eye to see if there are any other defects or any infections that could be treated immediately after birth' (Participant 3, district health director, male). In contrast, three participants had no knowledge on the policies for eye care for newborns or children. For example, one of the participants stated 'Personally, no. That is not to say there is none, there is but personally, I do not know' (Participant 6, district health director, male). For school health programmes, most participants (n = 8) were aware of the governing policy, and some participants mentioned the attachment of nurses to school clinics (n = 1) and referral of children when eye conditions were detected (n = 3). Additionally, one participant mentioned that all first-year students were screened for eye conditions as part of the policy. He indicated:

> 'Yes, I am aware that with this free school health screening we have a policy. For the new students that come to school you do a comprehensive screening for them that includes eye care services.' (Participant 4, district health director, female)

Participants also mentioned that school visits for screening were organised at different intervals like weekly (n = 2), monthly (n = 1), quarterly (n = 2) and yearly (n = 2). For instance, 'Okay, so they have their scheduled dates and they do it (the school screenings) weekly' (Participant 1, district health director, male). In contrast, three participants indicated that the school health programme was not regularised in their districts, but rather done when the need arises. This was expressed by one of the participants:

> 'What we have done is that we have integrated it [*eye screening*] into other programs. For example, when we are celebrating World TB Day, then ophthalmic nurses will set up a stand and will be doing screening.' (Participant 9, district health director, male)

Leadership, knowledge of eye staff and management of resources

Four participants confirmed that someone at their directorate was responsible for coordination of eye care services in the districts. For example, 'Yes, in our district the person (that coordinates eye care activities) is at the directorate' (Participant 2, district health director, male). Other participants (n = 3) stated that the focal person responsible for these services is based in the hospital. He expressed, 'In my directorate, we have an ophthalmologist. So, the last time we had a health screening, we contacted him and he organized a team for the activities' (Participant 10, municipal health director, female). The remaining three participants indicated that there was no focal person responsible for overseeing eye health services. For instance, 'No, we do not have (anyone), that is why the information in this area is scanty because we do not have anybody coordinating' (Participant 7, district health director, male). Most of the participants (n = 8) displayed good knowledge about eye care professionals accredited to provide eye care services for children in Ghana. Some even tried to mention the names of the various eye care professionals. For instance, 'I know of

ophthalmic nurses, ophthalmologists, optometrists, these are the three categories I know' (Participant 9, district health director, male). However, two participants indicated that they are unaware of eye care issues and therefore do not know the types of professionals involved. Most participants (n = 8) complained about inadequate human resources in their directorate and how this limited the distribution of staff evenly across the various communities in their districts and municipals. For instance, 'We do not have them (staff) available. The few that are around, if you spread them you will disorganize the system' (Participant 5, district health director, male). When asked about plans to recruit and retain more eye care professionals, some participants (n = 4) mentioned specific staff training, while others (n = 2) indicated how requests were made at the regional directorate. Additionally, participants indicated that providing good conditions of service (n = 3) and logistics (n = 2) were ways adopted to retain the few eye care professionals in their districts and municipal. For example, 'For the hospitals, I know that sometimes they give incentives (like accommodation) to some of the staff so they can retain them' (Participant 2, district health director, male).

Variation in the availability and level of provision of child eye care services

Most of the participants (n = 8) reported that eye care services are available in their districts and municipal as trained nurses are providing basic eye care services and referring complex eye conditions. For example:

> 'It is available because of the existence of the trained community health nurses at the peripheral facilities, so for suspecting, detecting, counselling, directing them and referring them to where they can get the services.' (Participant 5, district health director, male)

On the contrary, two participants mentioned that such services were not available because of lack of eye care professionals. This was explained by one of the participants:

> 'I would not say it [*eye care services*] is available. We do not have a team that is working on eye care that goes to the communities we do not have that.' (Participant 10, municipal health director, female)

When asked about the level of eye care services provided in the various districts and municipals, most of the participants (n = 8) indicated that they provide basic (primary) eye care services. For example, 'The basic (primary) level is provided by ophthalmic nurses, it is the basic level' (Participant 9, district health director, male). Furthermore, some participants (n = 3) mentioned that eye care personnel at the primary level refer complex cases for further management to secondary and tertiary facilities when needed. This was narrated by one of the participants, 'If it is beyond them, it is referred to either the Bekwai or Dominase hospital (district hospital) or even Komfo Anokye (teaching hospital)' (Participant 3, district health director, male). One of the participants added that a team regularly visits the sites to provide surgical (tertiary level) services. This was expressed:

> 'It [*the eye services*] is at primary facility level and they [*the nurses*] do without surgical intervention. However, they book for a team coming from outside the hospital to do surgeries.' (Participant 5, district health director, male)

Only one participant stated that all levels of eye care services are available in his district, and this makes it possible for all eye conditions to be effectively and timely managed. He explained:

> 'My district hospital, they [*eye care professionals*] provide almost every service that an eye care unit needs to provide and they do all kinds of surgeries.' (Participant 4, district health director, female)

Affordability and coverage of child eye care services by the national health insurance scheme

All participants (n = 10) reported that basic eye care services for children in their districts and municipal are affordable because of its coverage by the national health insurance scheme (NHIS). For instance, 'In terms of affordability, let me say that if you have NHIS that is valid, it is very much affordable' (Participant 5, district health director, male). One of the participants further explained that the NHIS only covers basic eye conditions as patients with complex conditions are required to make cash payments. In this regard, he stated, 'It is virtually free. It is when maybe you have to go the highest level and if the NHIS does not take care of it then you have pay for it' (Participant 5, district health director, male). Participants mentioned that the following services were covered by the NHIS: primary eye examinations (n = 4), consultations (n = 2), eye medications (n = 1) and minor eye surgeries (n = 1). For example, 'Yes, they do cover (ocular) medications and consultation' (Participant 1, district health director, male). On the contrary, five participants had inadequate knowledge on the categories of services currently covered by the NHIS, and they attributed this lack of knowledge to them not being eye care professionals. For instance, 'NHIS for eye, I do not know the details (categories of services) (because) I have not worked in any eye unit before' (Participant 6, district health director, male). Another participant considered lack of finances to pay for eye care services as a barrier that worsened uptake of these services for children in her district. She mentioned: 'Accessibility is a problem geographical and financial inability. When they (community members) cannot pay for eye services' (Participant 8, district health director, female).

Theme 3: Multisectoral engagements

Involvement of non-governmental organisations in child eye health initiatives

There were some NGOs such as ORBIS, Vision Spring, Sight savers and National cataract foundation that participants mentioned were sponsors of eye care services in their districts. For example, one participant stated, 'Last year we were privileged to have ORBIS International supporting our district' (Participant 9, district health director, male). However, four of the participants indicated that they have not received any communication or assistance from any

NGOs for eye care services. One of the participants stated, 'No, the one (NGO) we have in the district is doing other things (except eye care)' (Participant 10, municipal health director, female). Additionally, participants (n = 2) indicated that efforts to seek sponsorships for eye care services for children usually prove futile. For instance:

> 'I have written several proposals for this and other things but the eye [*and the associated eye care services*] is one of the areas that we have not got any support.' (Participant 3, district health director, male)

Some participants (n = 2) also mentioned that in the absence NGO involvement, they requested assistance from the district assembly and members of parliaments and social welfare. For instance:

> 'We can appeal to the district assembly for help and then the MP [*members of parliament*] too' (Participant 2, district health director, male).

Discussion

The findings of this study provide new insights into the provision of PEC services for children in Ashanti region by interviewing district and municipal health directors, an area where limited research has been conducted. The study reveals variations and gaps in accessibility, availability, affordability, delivery and sustainability of services for children. Findings highlight the compensatory strategies being employed to promote child eye services and key barriers to providing comprehensive eye care services for children. Additionally, findings suggest the involvement of NGOs in eye care provision, but sustainability remains an issue.

Sources, accessibility and utilisation of information on visual impairment among children

The accessibility and utilisation of health data on eye care in children is crucial for improving visual health outcomes. Research highlights the need for integrated data systems to record vision screening and follow-up outcomes in preschool-aged children, which can enhance eye health at individual, provider and epidemiological levels.[18] The study found varying sources, access and utilisation of information on the prevalence and causes of VI among children. This study shows that, the DHIMS is an existing monthly reporting platform for eye care in children, and this was supplemented by school health report and consulting room registers. This highlights the value of a regular centralised data reporting that supports monitoring and resource planning to inform health interventions and identify needs. This is consistent with a report that states the DHIMs is a database in Ghana for storing neonatal healthcare data.[19] The reliance on school health report and consulting rooms registers serves as a supplementary data source in the absence of comprehensive health information systems. These sources, especially school health reports, can effectively detect VI, particularly refractive errors, in a large number of children.[20] However, it was noted that in some of the districts, there was lack of access to data because of unavailable specialised personnel and eye care services. The absence of data on eye health in primary level facilities has been reported in similar studies done in other African countries.[21,22] This can prevent the better tracking of disease prevalence and targeted interventions. Limited availability, accessibility and affordability of eye care services are found to contribute to increased childhood VI in Africa.[23] Notable among the usage of information regarding VI in children are policy strengthening of child eye care through community sensitisation and health education. This will increase awareness and education, which is an approach in addressing health needs. This agrees with findings from Indonesia[24] that community empowerment through education and involvement of community agents is used to disseminate health information and improve public health. Periodic training and capacity building for staff were also found as uses for data received to develop and respond effectively to child eye issues. For other health directors, VI data are needed for follow-up on complex cases, which ensures continuity of care. In 2010, a study revealed that, for continuity of care to be ensured, sharing health data through health information is a requirement for clinicians.[25] All these findings reflect commitment to patient-centred care and highlight how effective data management can improve outcomes for VI in children. Therefore, there is a need to standardise report systems and ensure even distribution of resources across all districts.

Approaches to promote child eye services

Childhood blindness and VI are significant public health challenges that require innovative strategies.[20] Research has shown that various approaches can effectively promote child eye health. The findings from the study indicate that strategies such as community outreach, school screening programme and treatment of basic eye conditions by non-specialised staff were employed to compensate for the shortages of specialised eye care services. These strategies are beneficial as it may prevent travel that will incur cost for families. This supports research in India that found school eye screening and awareness programme to be effective strategies in addressing challenges in childhood blindness.[26] These were coupled by the involvement of community nurses trained by NGOs such as ORBIS to treat minor eye conditions in underserved communities. Orbis International has been known to provide free eye care services to the poor, prescribe spectacles and offer training to the workers since 1985. This approach serves as a sustainable eye care delivery strategy that allows services to be provided by available community health workers. Despite these significant approaches, challenges such as poor road infrastructure were paramount in impeding the organisation of outreaches in some of the communities. This insight supports research emphasising low availability of specialist services in rural India because of poor infrastructure.[27] Therefore, further investment in transportation and infrastructure is critical to expand the reach of these programmes and improve access to eye care services.

Resources for the provision of child eye services

Providing resources for child's vision care is important to address the high prevalence of undiagnosed and untreated vision problems.[28] However, the study findings reveal a gap in the allocation of resources for child eye care services. Resources such as eye medications and equipment as well as shortage of trained personnel were found as key barriers to providing comprehensive eye care. This is in line with a study that found key barriers to providing comprehensive eye care include shortage of resources like eye medications, equipment and trained personnel.[29] Additionally, previous studies in South Africa also highlighted that a significant number of facilities lack essential equipment and have inadequate infrastructure, which further complicates access to eye care in rural settings.[30,31] Budgeting is important for health organisations as it provides a visualisation of planned activities and funds to be operationalised.[32] This study reveals a composite budget that includes all health services was used in some of the districts, highlighting an inadequate prioritisation of child eye health within the health budget. Supporting evidence in Ethiopia[33] showed that health policies in Ethiopia also lack focus on child eye health, leading to inadequate prioritisation and funding for these services. To solve this problem, districts rely on partnerships with NGOs or sponsors to provide essential items such as spectacles and medications. These findings resonate with previous research that found the major barriers to providing on-site comprehensive eye care services in community health centres include the inability to afford necessary space or equipment.[34] These findings call for increased government investment and capacity-building initiatives to address gaps in specialised care services that are wanting.

Knowledge and implementation of service provision guidelines

Government guidelines and policies play a critical role in determining the delivery and usage of clinical care and impact medical.[35] The study found a gap in the knowledge on specific procedures and government-endorsed policies for children among the district health directors. The 2023 standard treatment guideline was found as a guide in management protocols for children in primary care establishments. This was revealed by one-fifth of the participants indicating variability in awareness and implementation of guidelines across districts. This follows a pattern found in a systematic review that there is considerable variability in the utilisation of clinical guidelines, with adherence and awareness being factors.[36] In other health areas, similar discrepancies in guideline awareness have been shown to contribute to inconsistent care standards, underscoring the need for comprehensive training and resource distribution.[37] Additionally, the study found that preventive measures, such as the application of antibiotics and screening for any eye defect at birth, are part of government policies for newborn infants. This is in line with the WHO's recommendation on universal screening for abnormalities of the eye.[38] However, other health directors expressed lack of awareness of such policies showing inconsistencies in early detection and management of eye conditions in newborns. However, the health directors displayed good level of knowledge about school screening programmes. To ensure early detection and prompt referral of eye conditions in schoolchildren, there are regular screening programmes, especially for first-year entry children, where nurses are being attached to school clinics. Regular school eye screening is important to identify and address refractive errors and VI in children.[39,40] There is also a noted variability in the frequency of screenings, with intervals ranging from weekly to yearly, suggesting inconsistent adherence to standardised screening schedules, which could lead to missed opportunities for early intervention. These findings underscore the need for comprehensive training, resource distribution, continuous policy dissemination and monitoring to improve guideline awareness and implementation across all communities.

Leadership, knowledge of eye staff and management of resources

Good leadership and management skills are critical for the effective and sustainable delivery of health services.[41] There was a variation in leadership structures, with some districts having dedicated coordinators for eye care services, typically at the directorate level, others at the hospital, while some districts lacked one entirely. This variability in coordination suggests a non-uniformity of service delivery with some health directors indicating limited information dissemination and resource mobilisation for eye care services. This is in line with a study that found that effective eye care leadership is foundational for the successful implementation of public health programmes; therefore, any discrepancy potentially contributes to gaps in service oversight and resource allocation.[42] Findings from this study show a good level of knowledge about eye care professionals among the health directors with some mentioning ophthalmologist, optometrist and ophthalmic nurses. This displays good understanding of the roles played by different eye care professionals in child eye care. However, some directors had limited knowledge in this area, indicating a potential gap that could be attributed to a lack of exposure to eye care services and training in their districts. This finding is consistent and agrees with South African research, which found that eye health managers have poorer knowledge and practices of eye health compared to human resources for eye health.[43] These observations suggest more training for health administrators to effectively manage and advocate for eye health services. The shortage of human resources was a major factor that limited the equitable distribution of eye care professionals across all districts. The uneven geographic distribution of eye care professionals is one of the reasons for poor eye care delivery. This is supported by a study done in Swaziland, which found that there is an uneven geographic distribution of eye care professionals, with most being found in the mainly urban Hhohho Region.[44] Additionally,

the shortage in workforce had led to struggles to meet community needs without disorganising the system. To address this issue, some health directors indicated targeted training for staff and requests to the directorate for more personnel. Others noted retention strategies such as improved conditions of service, logistical support and accommodation, which emphasised supportive work environments positively impacting employee retention.[45] The above findings indicate the need for more sustainable solutions for adequate staffing to address eye health issues among children.

Variability in availability and affordability of child eye care services

The main barriers to accessing child eye care services in Africa are affordability, accessibility and availability.[23] In the present study, there were differences in availability of basic child eye care services across districts and disparities in service levels. Child eye services are largely accessible in the districts included in this study, and these services are primarily provided by trained CHNs who detect, counsel and refer complex cases to appropriate centres. Community health nurses serve as the first point of contact for many families seeking eye care services. This aligns with a research showing that PEC integrated with PHC, facilitated by community health workers, can bridge the gap in eye care accessibility, especially in rural settings.[46] This approach is successful in improving early detection and reducing the burden of VI; therefore, the CHNs should be given the necessary training and equipment to be efficient. The unavailability of child eye services noted because of lack of personnel creates a significant gap in service coverage. The shortage of trained eye care professionals, including ophthalmologists, optometrists and ophthalmic nurses, limits the ability of healthcare facilities to provide comprehensive and timely eye care services for children. This agrees with research conducted in Ghana,[47] indicating a disproportionate distribution of eye care cadres across ophthalmic facilities and districts in the region. This gap affects early detection, treatment and management of eye conditions, leading to preventable VI. This supports literature that workforce shortage is a primary barrier to achieving equitable healthcare access in rural areas of developing countries.[48] Hence, it is recommended that eye care professionals be evenly distributed across all districts and measures be put in place for their retention. Furthermore, the referral pathway mentioned aligns with the WHO's recommended levels of eye care provision, with primary services managing routine cases and complex cases directed to higher-level facilities.[49] This model ensures that patients receive care at the appropriate level, ensuring timely and specialised interventions improving health outcomes. This calls for better training and improved referral coordination for equitable and accessible child eye care services. The study highlights disparities in service provision and coverage awareness among the health directors. It was found that the NHIS covers basic eye care, which renders the services generally affordable. The coverage by the NHIS indicates reduction in cost barriers for routine eye care needs. This was found in a survey done in Ghana that the NHIS in Ghana reduces out-of-pocket expenses and improves healthcare access. However, the limitation of the NHIS to cover only basic conditions leaves those requiring complex procedures to pay out of pocket, posing a financial barrier for many families. This finding resonates with a study in Ghana indicating that limited insurance coverage impacts service utilisation, especially among rural populations.[50] Fundamental services such as consultation and eye medications were found to be covered by the NHIS. This demonstrates the accessibility of primary-level services to most insured children in the communities. Some health directors further expressed inadequate knowledge about the specifics of the NHIS coverage, which they attributed to non-involvement in eye care services in their various districts. This suggests the need for involvement and proper dissemination of the details of the NHIS policies to all stakeholders, including non-specialist administrators. Geographical and financial barriers still emerged to limit eye care services despite the wide coverage of the NHIS. This reflects a challenge in rural communities where even affordable services remain out of reach as a result of transportation cost, distance and other logistic constraints. A study from Kenya confirms that financial and geographic barriers negatively impact healthcare access, hindering progress towards universal health coverage.[51] This finding suggests interventions beyond the NHIS such as community outreaches to bridge accessibility gaps and extend equitable eye care services to all children.

Involvement of non-governmental organisations in child eye health initiatives

Non-governmental organisations can play an important role in supporting and integrating community-based health services, including those for child health.[52] Findings from the research suggest the critical role NGOs play in child eye care services in the various districts and the gaps that exist. Non-governmental organisations like ORBIS international, sight savers, vision spring and national cataract foundation were found to be involved in providing support for eye care services among children in some districts. The support from these NGOs indicates the alleviation of financial and logistics-related burden faced by health departments that lack resources for specialised services like eye care. However, these supports are not universally available as some directors stated lack of involvement of any NGO in their district. This underscores the need for more consistent, inclusive and sustainable funding mechanisms for child eye health services. Furthermore, in the absence of NGOs, district assemblies and member of parliaments are contacted for support. These agencies can fill immediate gaps but are not reliable as they do not provide comprehensive or sustainable support needed for long-term child eye care initiatives. Therefore, a multi-sectorial commitment involving the ministries of health is needed to explore underutilised interventions that can better connect districts

and providers to enhance the quality of health care across all districts.

Limitations

The study was limited by focusing only on district health directors' perspectives, missing insights from other healthcare personnel including frontline eye care professionals. The limited number of districts represented and the possible regional bias towards areas where NGOs have higher visibility are notable limitations of this study. Another key limitation is the sampling approach, which might have resulted in unbalanced representation of districts with diverse settings. Future research could focus on identifying barriers NGOs face in extending support to more districts and explore how sustainable partnerships could be developed to ensure equitable access to child eye health services across regions. Additionally, a stratified sampling approach be considered to ensure more balanced representation and an enhanced understanding of child eye care services in the different districts in the region.

Recommendation

There was inconsistency in the frequency and accessibility of data regarding VI in children, which is vital for decision-making and policy planning. Compensatory strategies such as community outreaches and school screening programmes were employed to increase child eye services in all communities; yet challenges such as lack of resources and poor infrastructure persisted. Further, the study highlights the need to make policies that are sustainable to govern eye care services in children. Primary-level eye care services were readily available with more complex cases relying on referral systems. This calls for upscaling the services in the communities by allocating advanced resources and strengthening the referral pathway to manage complex eye conditions among children. The NHIS has also been found to improve service affordability, by covering basic eye care making those with complex conditions pay out of their pockets. Finally, the lack of regular multi-sectoral engagements, particularly with NGOs, has limited the potential for resource mobilisation, public awareness and coordinated policy implementation in child eye health. Establishing more accessible and sustainable eye care services is essential for addressing preventable blindness and vision impairments among children, with long-term benefits for their health, education and quality of life.

Conclusion

In conclusion, this study highlights critical gaps and challenges in the provision of PEC services among children in districts in the Ashanti region of Ghana. Therefore, to establish accessible, sustainable and well-integrated eye care services for children, there is a need to address gaps in data availability, strengthen infrastructure, enhance multi-sectoral collaborations and improve equity and affordability as such efforts can significantly reduce avoidable VI among children.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article. The author, A.J.M., serves as an editorial board member of this journal. The peer-review process for this submission was handled independently, and the author had no involvement in the editorial decision-making process for this manuscript. The authors have no other competing interests to declare.

Authors' contributions

E.M.A. contributed to the conceptualisation, methodology, data collection, formal analysis and manuscript writing. A.J.M. contributed towards the supervision, project administration, review and editing, conceptualisation and methodology. N.R. contributed to the supervision, project administration, review and editing, conceptualisation and methodology.

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Data availability

The data that support the findings of this study are not openly available because of confidentiality and are available from the corresponding author, E.M.A., upon reasonable request.

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