Inclusive eye health in Bhopal, India: Assessing characteristics of patients and measuring equity of access to eye health services, 2014-2017.

A summary report of data collected in the Madhya Pradesh Urban Eye Health Project – Bhopal, India

July 2018

Sightsavers

Contents

Introduction

Sightsavers is a UK-based international NGO that has been working with partners in Africa and South Asia to deliver eye health and inclusion programmes for many years. In recent years, the two programme areas have converged around a field of work known as *inclusive health*. This is the field that recognises that the needs of people with disabilities extend beyond their disability to broader health, and that universal health coverage cannot be achieved without addressing the issues of exclusion which face marginalised groups. Although much of the focus within the inclusive health area is on disability inclusion, it also incorporates gender inclusion. In many of the locations where Sightsavers works, women are less likely to access eye health services and thus experience worse eye health outcomes. Although elements of inclusive health have been happening informally for some time, its recognition as a key work area forces the organisation to focus in a way that would not have happened otherwise. One of the results of the recognition of inclusive health as a key area of work within Sightsavers is a focus on the collection of disability data within the health data collection systems.

Sightsavers India has been delivering the Madhya Pradesh urban eye health programme (MPUEHP) since 2014. The programme runs in Indore and Bhopal and works with hospital and community-based partners. It aims to increase the access of disadvantaged populations - slum dwellers in particular - to eye care services through the establishment/development of vision centres located within slum communities and targeted outreach camps to identify and treat or refer patients for eye health problems.

In Bhopal, the MPUEHP works with a hospital partner - Sewa Sedan hospital - and a community based non-governmental partner AARAMBH (Advocacy for Alternative Resources, Action, Mobilisation and Brotherhood) to deliver the programme. In 2014, Bhopal was chosen as the site of a pilot project to test the collection of disability data from eye health settings, which ran until the end of 2015. Immediately afterwards, an inclusive eye health pilot approach was incorporated into the MPUEHP in Bhopal and disability data continued to be collected. The project aimed to increase the number of people with disabilities and women accessing eye health services from the programme over its 18 months lifespan.

Inclusive eye health approach in Bhopal

***Objectives*:**

The inclusive eye health project in Bhopal had two key objectives. First, it aimed at making the MPUEHP programme more inclusive, by reducing barriers to healthcare and reaching more people with disabilities and women with eye care services. Second, it aimed to develop and test a series of tools and approaches that could eventually be further tested and replicated across Sightsavers' eye health portfolio in Asia and Africa.

***Activities*:**

Project partners collaborated to develop a network with local stakeholders, including health providers, disability organisations and educational institutions, with a view to developing joint interventions and reaching the most marginalised individuals in the community. Focus group discussions were organised to understand contextual barriers and identify potential solutions through a participatory approach. Accessibility audits were conducted in all project facilities to identify infrastructural barriers preventing people with disabilities from accessing services. Infrastructural interventions were then carried out to mitigate those barriers and improve the accessibility of the hospital and vision centres. All eye health staff and senior managers attended training on disability inclusion and gender mainstreaming. A twin-track approach was adopted for outreach activities: adjustments were made to standard outreach camps to increase their level of

inclusion and accessibility, and targeted screening camps were organised in collaboration with the stakeholder network to reach children and adults with disabilities, vulnerable women and other marginalised groups in the community. Community meetings were organised to raise awareness on eye health and inclusion, and to increase service uptake among key target groups.

***Outcomes*:**

A learning review conducted at the end of the project identified several areas of success. Anecdotal feedback suggests the accessibility of health facilities has improved throughout the life of the project, and eye health staff and senior managers demonstrated increased knowledge and more positive attitudes towards people with disabilities following the training and ongoing sensitisation. The project succeeded in establishing productive collaborations with local stakeholders, which in turn increased the number of marginalised individuals reached with eye care services. Through this process, Sightsavers also played a key role in the establishment of the Madhya Pradesh Disability Network, and strengthened cooperation with the government by embedding eye health clinic within public health facilities. The project also contributed to the development of an inclusive eye health model and a comprehensive set of tools which are currently informing Sightsavers' inclusive health programing in Asia and Africa.

Box 1: Key characteristics of the Bhopal inclusive eye health pilot, January 2016-June 2017

This report describes the data collected during the two project periods and identifies some key trends that have emerged from the data. The report seeks to identify whether patients attending services during the inclusive eye health period had different characteristics than those attending during the earlier (pre-intervention) disability data collection period.

Methods

Data was collected from project sites in Bhopal from September 2014 until June 2017. The first phase – the disability data phase or 'DD period' - ran from September 2014 to December 2015, and the second phase - inclusive eye health or the 'IEH period' - ran from January 2016 to June 2017.

Data was collected in three project sites: the base hospital, Sewa Sedan Eye Hospital, and the vision centres and associated outreach camps run by AARAMBH. Data was collected in the hospital from December 2014 to April 2016, although partial data was collected between June and September 2016 inclusive. Data was collected in vision centres and outreach camps for the entire period, however the number of vision centres increased over the project period. Five vision centres became operational over the course of the DD and IEH periods, starting with Chandbad VC in September 2014 and ending with Kolar VC in July 2016.

Data was collected by trained data collectors who sat alongside the administrative staff of the respective organisations. Forms were developed to collect patients' age, sex, and responses to disability questions (see below). Forms were summarised and shared with a project coordinator who inputted them into Excel format, which were then collated for analysis.

Data was not collected from people aged under 18 years before 1st February 2017. After that date, it was collected from patients aged over five years.

Statistical analyses were conducted in Stata version 15. Basic descriptive analyses were conducted to show the distribution and central tendency of the data, where relevant. Analyses of one-on-one relationships between variables (univariate analyses) were conducted using the chi-squared statistical method. Relationships between multiple variables (multi-variate analyses) were analysed using logistical regression with disability at the outcome variable and variables with an observed univariate relationship included in the model as explanatory variables.

Tables in this document show odds-ratios and p-values to describe the strength of uni- and multi-variate relationships. Odds ratios are a key statistical technique to measure how the presence or absence of a characteristic is related to the presence or absence of another characteristic. P-values indicate the likelihood the differences observed between the two groups happened by random chance (sampling error) and isn't a 'real' (population) difference. For example, a p-value of 0.1 indicates a 10% likelihood the observed difference was due to chance. Therefore, we are interested in very small p-values to indicate whether the odds ratios we calculate are 'true' or not. Conventionally, we use p-value of 0.05 (5%) or less, as small enough to conclude that the difference observed is a 'true' difference and not a chance. Full results are presented in tables within the report and in the appendices.

Disability questions

We asked a number of questions to measure disability using different methods to best understand the characteristics of patients and to triangulate data.

- We used the question on disability from the 2011 India census to determine a binary measure of disability. The question "are you disabled?" had two response categories of "yes" or "no". This question was asked to all participants in the DD period and to patients until 1st February 2017 of the IEH period, after which date it was no longer asked.
- We used the Washington Group Short Set (WGSS) of questions on disability that have been developed for use in censuses and surveys to collect internationally comparable data on

disability/disaggregate by disability[1]. These are six questions asked to an individual to ascertain the level of difficulty they face in different functional domains and have four response categories: “no difficulty”, “some difficulty”, “a lot of difficulty”, and “cannot do at all”. For these purposes, disability is considered present if an individual responds as having a lot of difficulty or cannot do at all in one or more functional domains. It should be stressed that the WGSS is a survey tool, intended to identify people at risk of not participating in society due to health-related difficulties they experience, and not intended for diagnostic purposes.

- We also created a measure of non-visual disability in order to separate out individuals who were experiencing disability not related to eye care services. To do this, we used the WGSS as described above, but without the functional domain related to vision. Therefore, in this case we used the same responses to the remaining five functional domains to calculate whether non-visual disability was present or absent within the individual. People identified as having non-visual disabilities may of course also have a visual disability, as may people without non-visual disabilities, but that is not captured within this indicator.

[1] Madans, J.H. and Loeb, M., 2013. Methods to improve international comparability of census and survey measures of disability. Disability and Rehabilitation, 35(13), pp.1070-1073.

Results

Characteristics of patients attending services

In total, we collected data from 71,014 people over the whole period. However, not everyone was asked or answered every question and subsequently some of the analyses below include different numbers of people. Table 1, below, describes the number of missing data points across the entire dataset.

Service location and date were complete for all people questioned, and age and sex were complete for 99.9%. The majority (98.1%), or 4,542 of the missing 4,629 responses to the WGSS, were due to people being deliberately excluded in the DD period as they were aged under 18 years. Similarly, the majority (94.3%) or 17,875 of the missing binary disability questions were due to a decision not to proceed with that question in the IEH period.

Variable	Complete responses	Missing data
Sex	70,963 (99.9%)	51 (0.07%)
Age	71,007 (99.9%)	7 (0.01%)
Location	71,014 (100%)	0 (0%)
Year	71,014 (100%)	0 (0%)
Washington Group questions	66,385 (93.5%)	4,629 (6.5%)
Binary question	52,060 (73.3%)	18,954 (26.7%)

Table 1: Missing data across the dataset

We collected WGSS responses from 66,385 people between 2014 and 2017. Most of the data was collected during the IEH period (2016/2017) (Figure 1)[2]. Overall, we collected more data from females than from males (54% compared with 46%). During the IEH period, the difference was greater (57% compared with 43%) than the pilot period (51% compared with 49%). Full details of the differences between the DD and IEH periods are described in Appendix 1.

[2] Sex data missing for 18 people

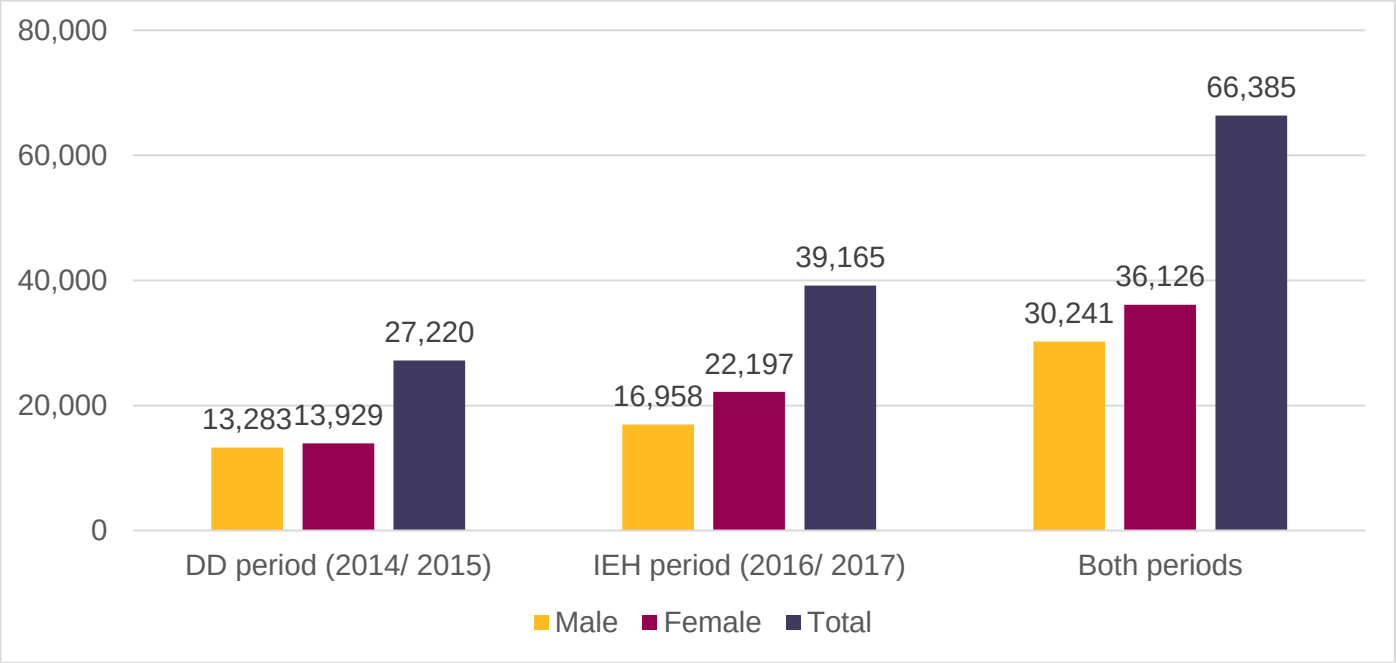

Figure 1 Number of males and females who answered WGSS disability questions

For the majority of the DD period, we only collected data from adults aged 18 years or above. The average age of the people who answered the disability questions during that period was 45 years. During the IEH period, when the questions were also asked to people aged 5-17 years, the average age was 38 years.

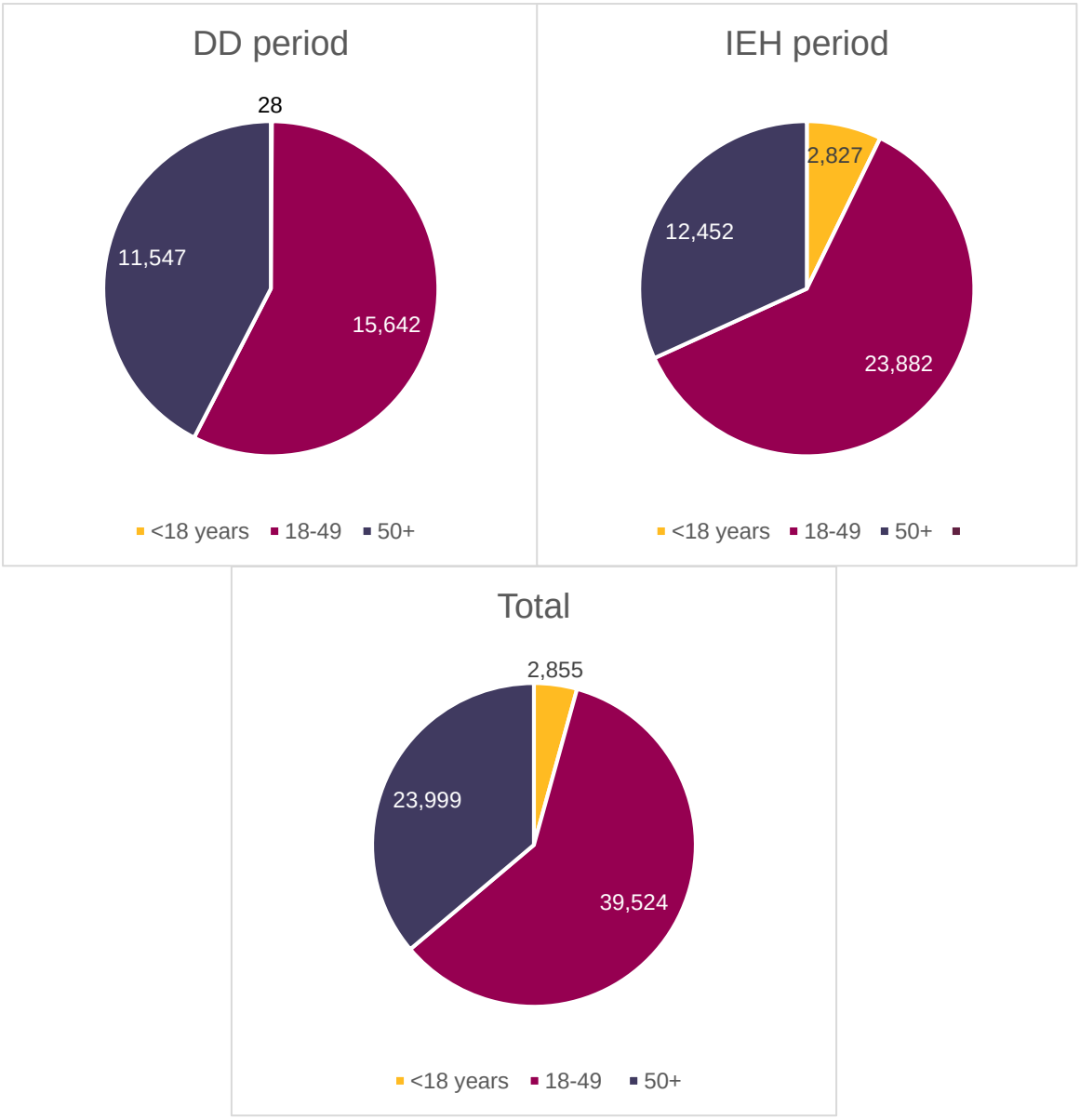

Figure 2 Number of people of different age groups who answered disability questions

Over the whole period, the majority of participants who answered the WG disability questions were attending outreach camps (48%), then the hospital (36%) and the smallest proportion (16%) were attending vision centres (Figure 3). The number of outreach camps varied between months and over the years. The number of operational vision centres also increased over the course of the programme. The hospital collected data for 13 of the 16 months of the DD period and for three of the 18 months of the IEH period.

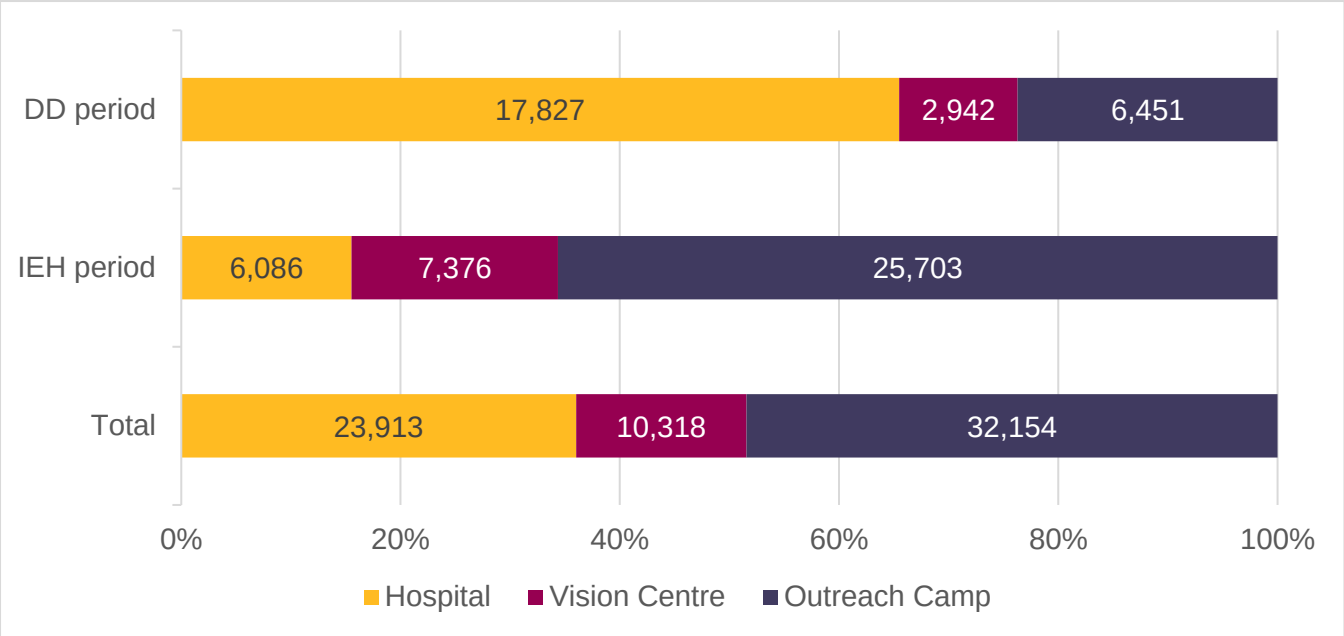

Figure 3 Number of people who attended different service locations and answered disability questions

Over the whole period, 16,781 people who answered the questions can be considered disabled using the WGSS. Comparatively, very few people (518) reported being disabled when asked directly whether they were disabled. For both measures of disability, three-quarters of the identified people attended services during the IEH period.

Excluding people with visual-disabilities, a total of 9,513 people who answered the questions can be considered non-visually disabled. Nearly 80% of these people attended services during the IEH period.

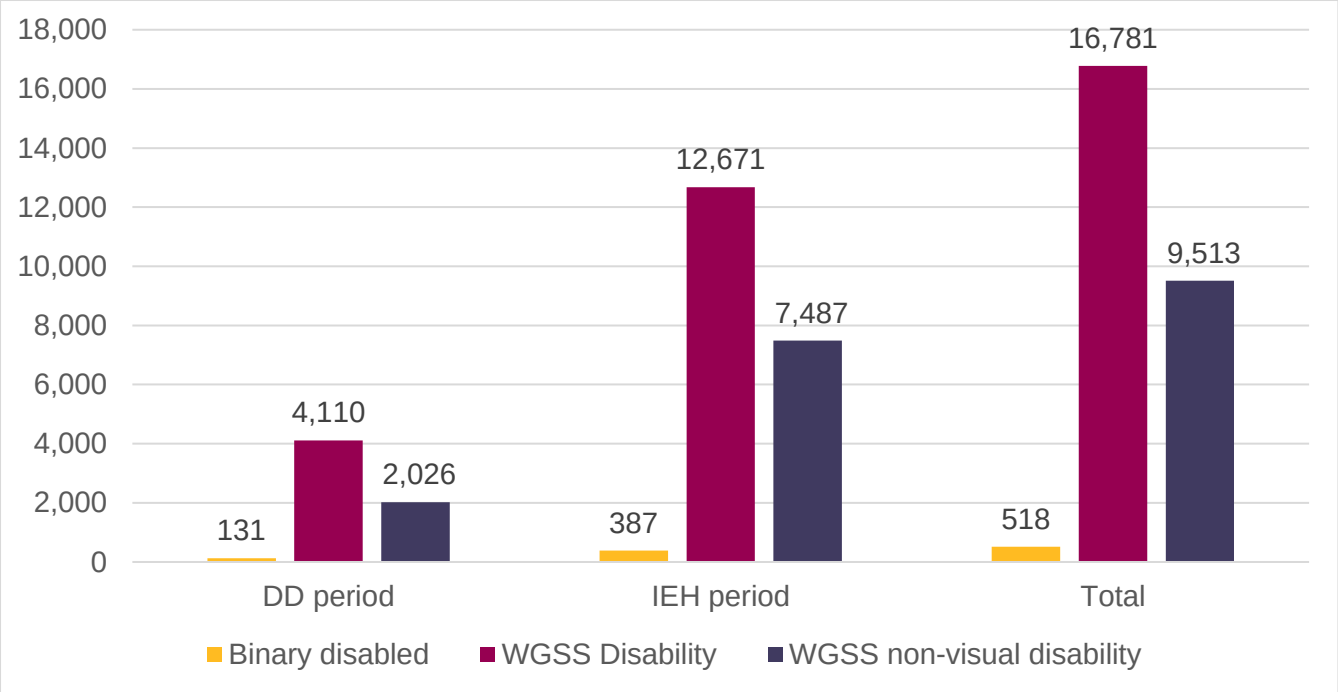

Figure 4 Number of people who reported having a disability

Among people who answered all the questions necessary for the calculation, the prevalence of disability using the WGSS over the whole period was 25%. In the IEH period, it was more than twice as high as the DD period (32.3% versus 15.1%). Over the whole period, prevalence of disability using the binary measure was 1.0%. In the IEH period, it was more than three times higher than the DD period (1.6% versus 0.5%).

Prevalence of non-visual disability was 14.3% over the whole period. In the IEH period, it was 2.6 times higher than the DD period (19.1% versus 7.4%).

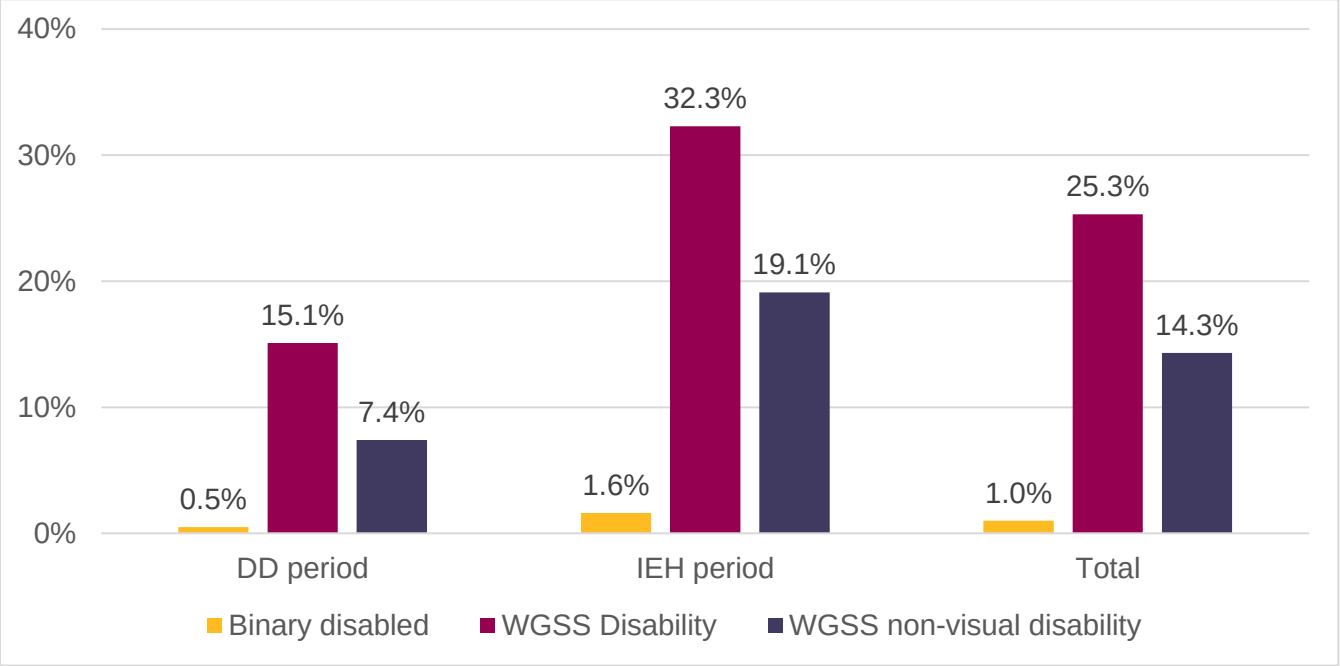

Figure 5 Prevalence of disability among people answering disability questions

Table 1 shows that although 75% of people who responded “no, I am not disabled” to the binary question were also not disabled according to the WGSS, the remaining 25% (12,930 people) were considered disabled according to the WGSS. Among the 518 people who responded “yes, I am disabled” to the binary question, just over half (53.7%, 278 people) were considered disabled according to the WGSS and 46.3% (240 people) were not considered disabled according to this tool.

		Binary disability		Total
		Not disabled	**Disabled**	
WGSS disability	**Not disabled**	38,602 (74.9)	240 (46.3)	38,842 (74.6)
	Disabled	12,930 (25.1)	278 (53.7)	13,208 (25.4)
Total		51,532 (100.0)	518 (100.0)	

Table 2 Agreement between different disability measures

Characteristics of people with disabilities attending services

When we compared the characteristics of people with and without disabilities (using WGSS) we found them to be different according to their age, sex and the location where they were asked the questions. Appendix 2 shows the details of the results in full.

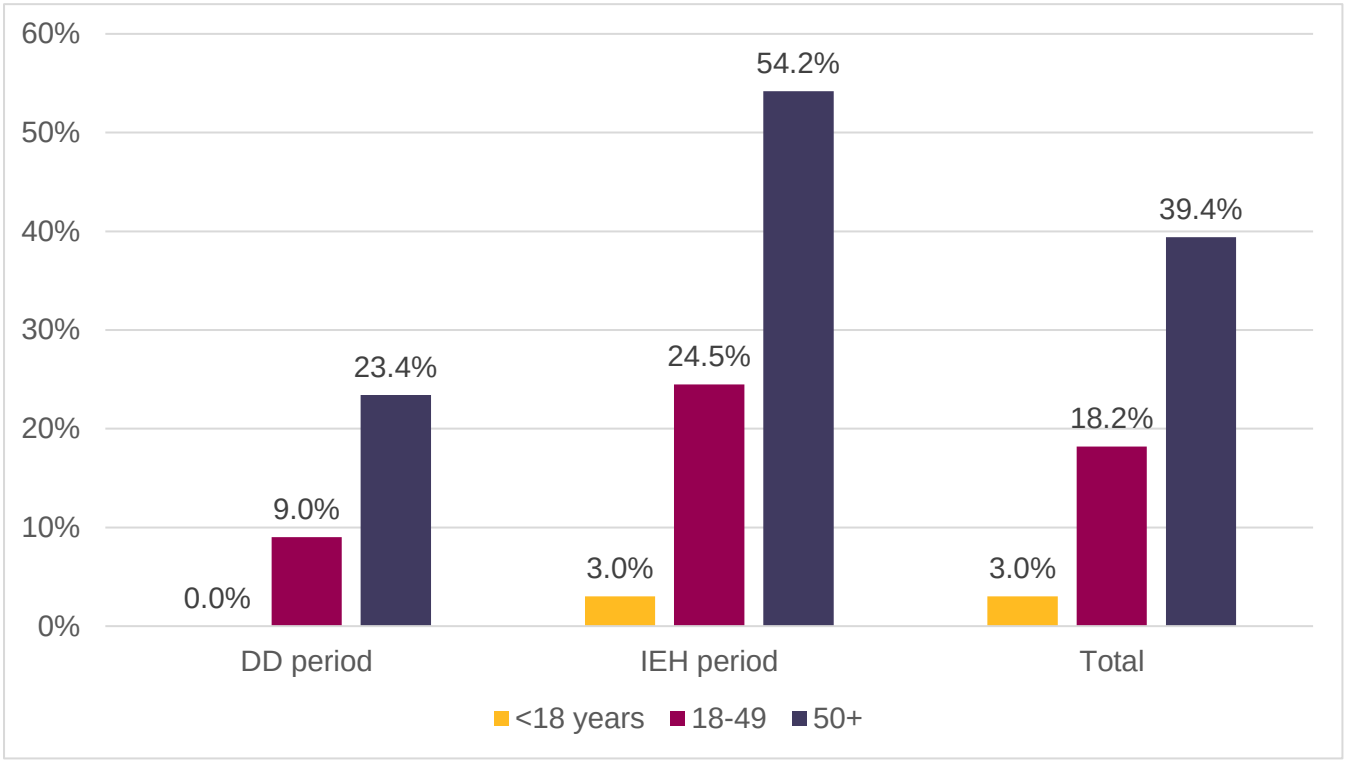

Figure 6 shows prevalence of disability by age group in both project periods.

Age and disability are strongly correlated among the people who answered the questions. The mean age of people without disabilities was 40 years compared with 52 years among people with disabilities. Prevalence of disability varied significantly by age with people aged over 50 years having over double the prevalence of disability compared to people in the 18-49 age group in both periods of the project.

The pattern was similar among people with non-visual disabilities; the average age of people without non-visual disabilities was 41 years compared with 53 years for people with non-visual disabilities. People in the older age group (over 50 years) were more than twice as likely to have a non-visual disability than people in the younger (18-49 years) age group.

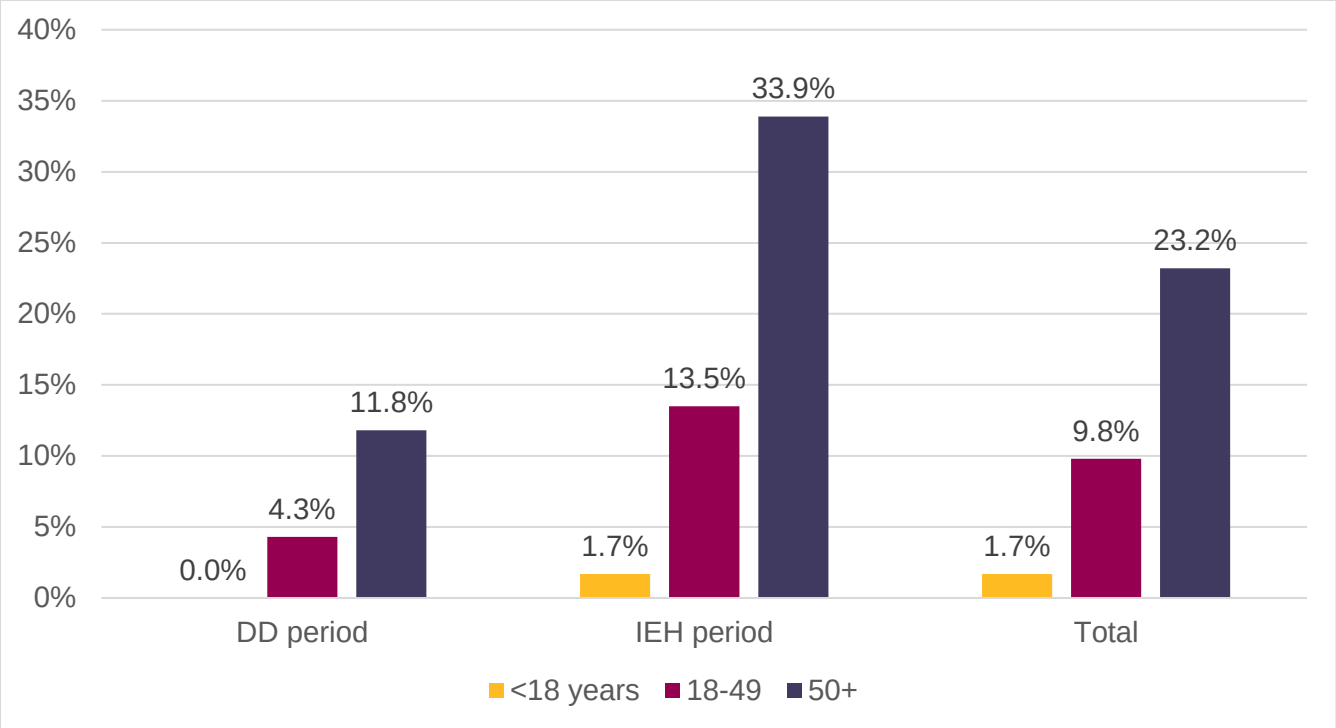

Figure 7 shows prevalence of non-visual disability by age group in both project periods.

Among the people who answered the questions, prevalence of disability was higher among women than men, and the difference was particularly acute in the DD period (17.5% compared with 12.6% among men). Conversely, among people who answered the binary question, prevalence of disability was around 50% higher among men in both project periods.

Between the two project periods, prevalence of disability measured by the WGSS increased nearly 2.6 times for men and nearly two times for women. Over the same period, prevalence of disability measured using the yes-no tool increased over three times for both men and women.

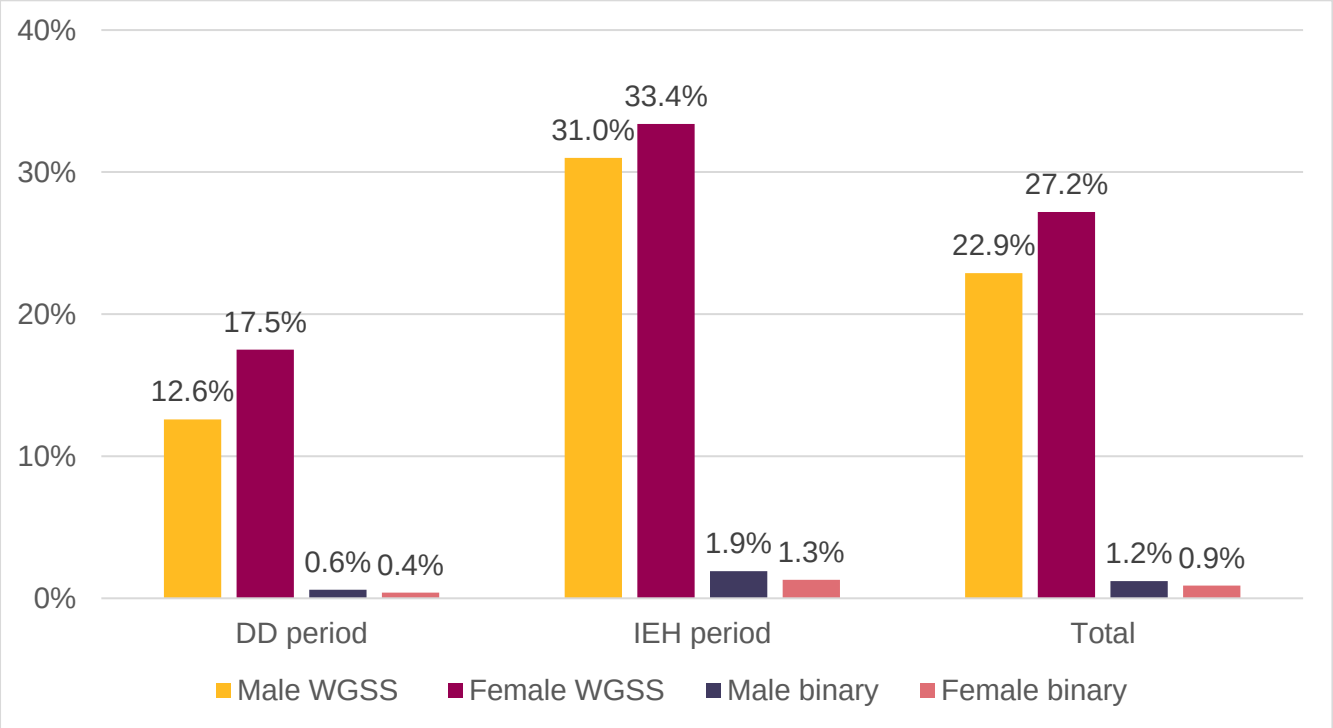

Figure 8 Prevalence of disability between men and women in different project periods

Overall, 16.6% of women and 11.6% of men had non-visual disabilities. The gender gap was greatest in the pilot period when women were more than twice as likely to have a non-visual disability than men. Although prevalence increased in both groups in the IEH period, it increased most among men and the discrepancy reduced to women having 1.2 times greater chance of having non-visual disability than men.

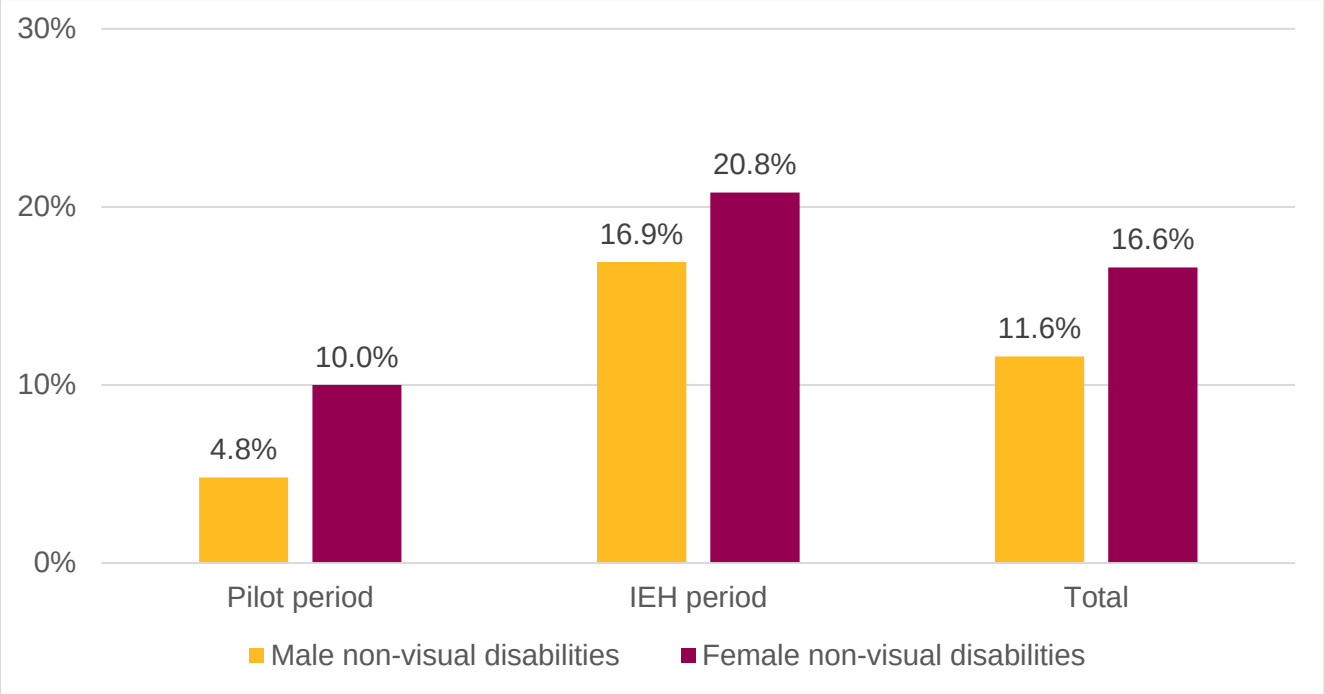

Figure 9 Prevalence of non-visual disability by sex over the two project periods

Prevalence of disability was also higher among people who answered questions in certain locations. During both periods, the prevalence of disability was highest among people answering questions at outreach camps, likely reflecting the fact that many outreach camps were targeted directly at people with disabilities and conducted in places they were likely to live or spend time. A very small increase (6%) was observed between the two periods.

Vision centres reported a slightly lower prevalence than outreach camps, but no statistically significant change was observed between the two periods.

Although prevalence of disability at the hospital is consistently and notably lower than the other two locations, it increased nearly threefold between the two periods.

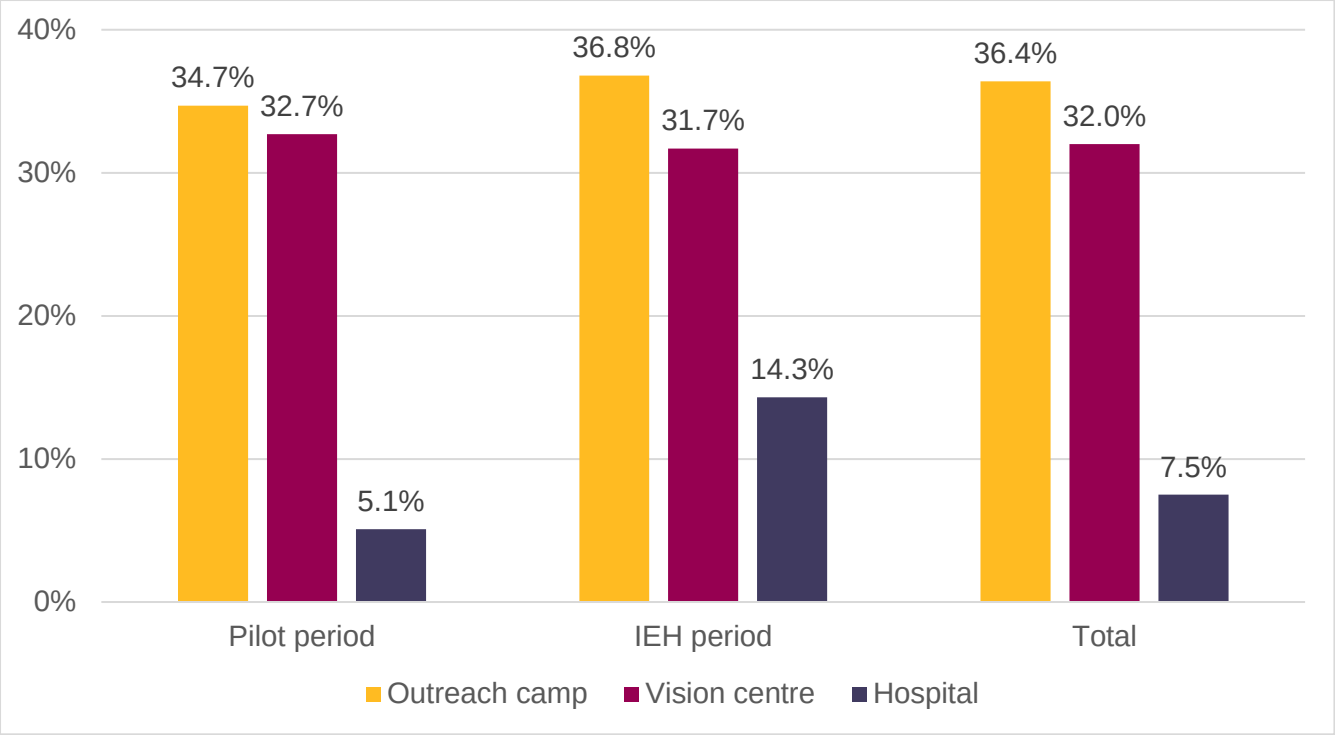

Figure 10 Prevalence of disability at different service locations in the two project periods.

Overall 22.3% of people attending the outreach camp had non-visual disabilities. In the vision centres it was 20.9%, and in the hospital just 0.8%. The vision centre and outreach camp only saw very small, potentially negligible, increases in prevalence between the two project periods from 18.9% to 21.6% and from 21.4% to 22.6% respectively. Although the prevalence at the hospital remained small, it increased threefold between the DD and IEH periods from 0.5% to 1.5%.

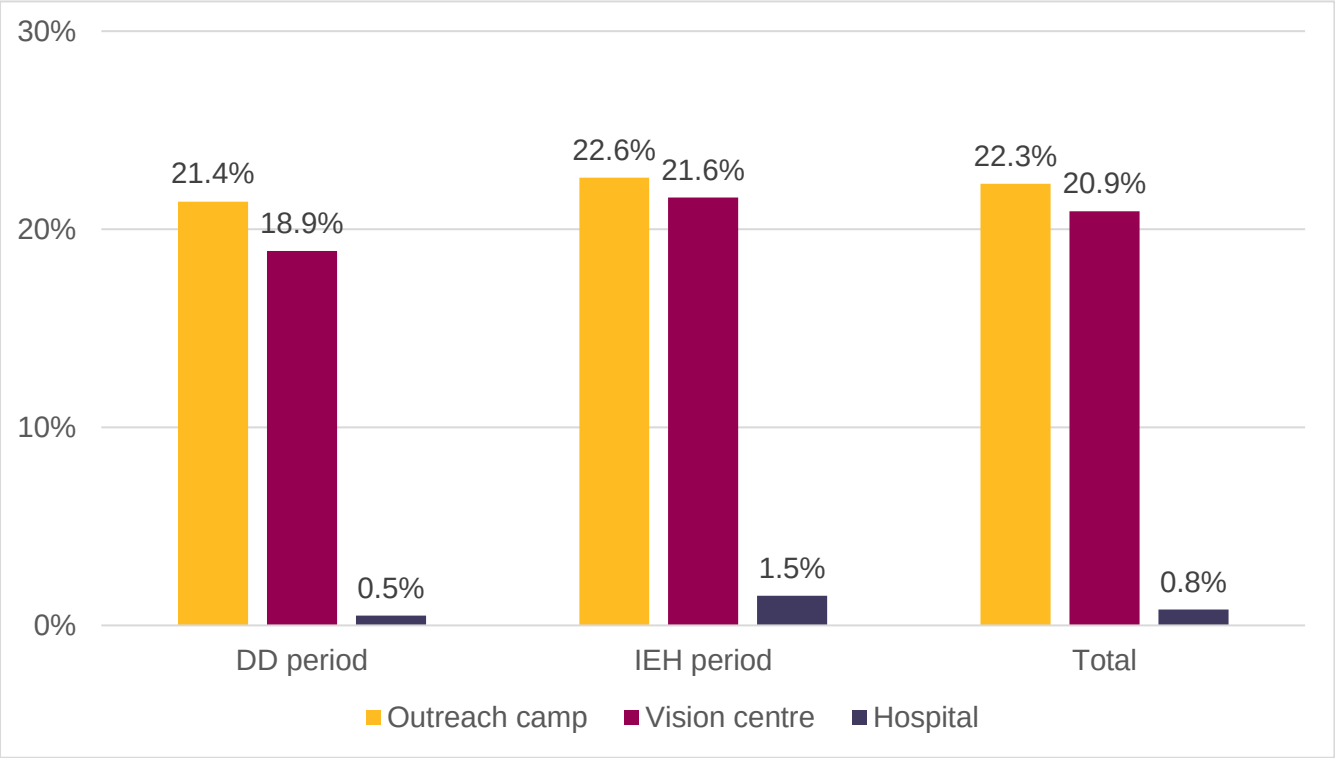

Figure 11 prevalence of non-visual disability by location in the two project sites

Characteristics of men and women attending services

The characteristics of males and females answering the disability questions varied somewhat. Appendix 3 describes the data results in full.

The age distribution of men and women answering the disability questions were broadly similar.

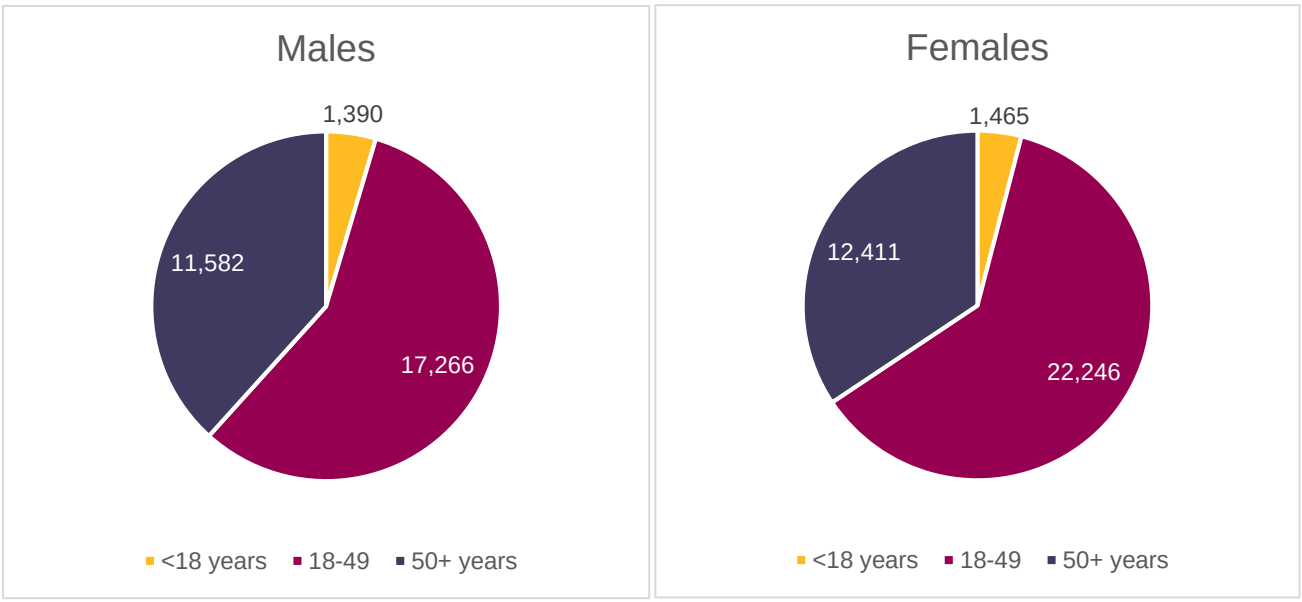

Figure 12 Age distribution of males and females

There were more women among people reporting disability at outreach camps and vision centres, constituting around 60% of the total in both sites over both periods. In the hospital, they constituted around 47% of the total number of people reporting disability, again with little difference between the project periods.

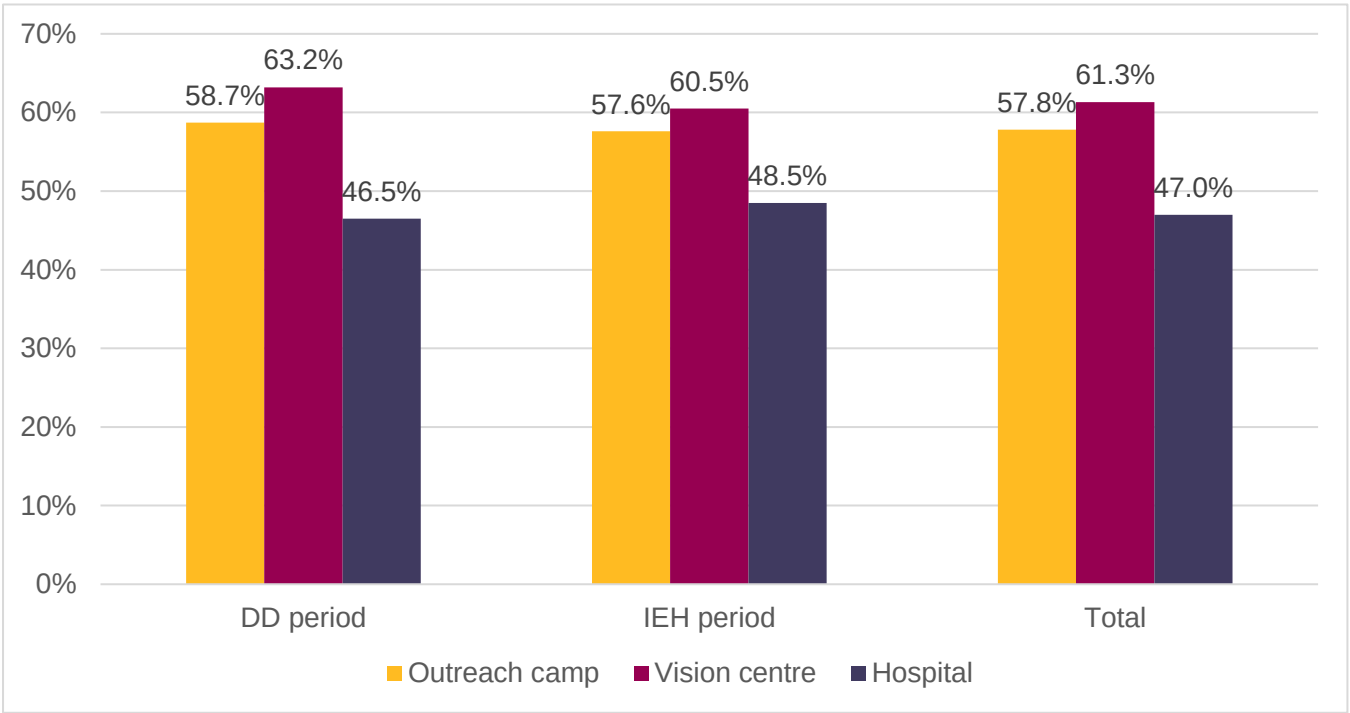

Figure 13 Females as a proportion of people answering questions in project sites

Understanding intersectionalities in the data

The data presented above shows clear relationships between disability and other characteristics: sex, age and service location. However, it is important to understand how those factors combine, or *interact*, in relation to disability.

Age is known to be an important predictor of disability. As supported by the data presented above, older people are often more likely to have a disability than their younger counterparts. Therefore, if older people are over-represented in any of the other groups (e.g. women attending services were older than men; or older people were more likely to attend one of the service locations than another), that could skew the data and effectively 'hide' the true relationships with disability. Table 3, below, shows how age, sex, location and project period relate to disability - both independently and combined.

From our data, women have 1.3 times increased odds of being disabled compared with men. If we adjust for age - that is, if we make statistical adjustments for the small age differences between the men and women in the sample - women have 1.4 times increased odds of being disabled compared with men. This suggests that the age differences between males and females 'hid' some of the relationship between sex and disability; and this relationship in fact is stronger than in the basic analysis without the age adjustment. After the adjustment, women attending eye care services were 40% (30% in the basic analysis) more likely to report disability than men.

From our data, we also see that people attending vision centres have 5.8 times greater odds of being disabled than people attending hospitals. People attending outreach camps have 7.1 times greater odds of having a disability than people attending the hospital. Accounting for the age differences in patients attending the different centres, people attending vision centres have 9.0 times greater odds and people attending outreach camps have 11.6 times greater odds of having disability than patients attending hospitals respectively. As with sex, some of the relationship between disability and service location was effectively hidden by the relationship between disability and age.

We can also see that people attending services during the IEH period had 2.7 times greater odds of being disabled than people attending during the DD period. If we adjust for the small variations in age between people in those two groups, people attending in the IEH period had 3.9 times greater odds of being disabled than people attending during the DD period.

Age is not the only characteristic that may be mediating the relationships between disability and the other variables, and they may all to some extent interplay with each other. We can use a statistical technique (multivariate logistic regression) to mutually adjust all the characteristics simultaneously so we can see how they are independently associated with disability.

Following this mutual adjustment, we can see that although they all independently retain their relationships with disability, the strength of the relationships has changed:

- The service location where an individual reports disability is the strongest independent predictor of disability with people answering in outreach camps having 8.7 times greater odds, and people answering in vision centres having 7.0 times greater odds of being disabled respectively when compared with people attending the hospital.
- People who attended services during the IEH period had 1.9 times greater odds of being disabled than people who attended the services during the DD period.
- Females had 1.3 times greater odds of reporting disability than males.
- Older people had greater odds of being disabled than younger people. For each year of age difference, the odds of reporting disability increased by 4%. This means that for each age

decade, the odds of being disabled were 1.4 times (or 40%) greater than for those a decade younger.

Characteristic		a) Crude relationship	b) Adjusted for age	c) Complete mutual adjustment
		Odds ratio	**Odds ratio**	**Odds ratio**
Age	One-year increment	1.04*	-	1.06*
Sex	Male	-	-	-
	Female	1.3*	1.4*	1.2*
Location	Hospital	-	-	-
	VC	5.8*	9.0*	7.0*
	OC	7.1*	11.6*	8.7*
Project period	DD	-	-	-
	IEH	2.7*	3.9*	1.9*

* ***relationship is extremely unlikely to have occurred by chance, p<0.001***

Table 3 showing relationships with disability between patient characteristics a) crudely and b) following adjustment for age.

If we apply the same analyses to the measure of non-visual disability, we can see similar patterns arising, however the strengths of association are drastically different for service location.

- Service location continues to have the strongest association with disability. However, the magnitude of association is much greater. Thus, people attending outreach camps and vision centres have around 40 times greater odds of having a non-visual disability than people attending the hospital.
- People attending services during the IEH period have 1.7 times greater odds of having a non-visual disability than people attending during the DD period.
- Females have 1.5 times greater odds of having a non-visual disability than males.
- Increased age is associated with non-visual disability with each additional year, adding a 6% increase odds of non-visual disability.

Characteristic		a) Crude relationship	b) Adjusted for age	c) Complete mutual adjustment
		Odds ratio	**Odds ratio**	**Odds ratio**
Age	One-year increment	1.04*	-	1.06*
Sex	Male	-	-	-
	Female	1.5*	1.7*	1.5*
Location	Hospital	-	-	-
	VC	34.7*	49.4*	39.6*
	OC	37.9*	55.2*	43.4*

Project period	DD	-	-	-
	IEH	2.9	4.0*	1.7*

* ***relationship is extremely unlikely to have occurred by chance, p<0.001***

Table 4 showing relationships with non-visual disability between patient characteristics a) crudely and b) following adjustment for age

Conclusion

The data presented above reveals interesting patterns about how people with different characteristics accessed Sightsavers' eye health project in Bhopal over the project period. The dataset is extremely large with relatively little missing data and we have good reason to trust the quality of the data as collectors were well trained, supervised and the tools were well tested.

Overall, a large proportion of project clients have disabilities, including non-visual disabilities, with the proportion increasing during the IEH period. Of course, the nature of the services would determine that a certain proportion of clients have visual disabilities so the fact that the patterns hold in the data *excluding* the visual domain indicates a robustness to the findings.

Women are more likely to report disabilities than men using the WGSS and less likely to self-identify as disabled using the binary (yes-no) measure. Women are more likely to attend outreach camps and vision centres, but less likely to attend the hospital than men.

People with disabilities are more likely to attend community-based services (outreach camps and vision centres) than the hospital. The difference is particularly pronounced for people with non-visual disabilities.

Older people are more likely to be disabled than younger people, regardless of the measure used to define disability.

The data is not dissimilar to that collected from population-based surveys elsewhere in India that used similar measures of disability. The prevalence of disability in Telangana State using the WGSS was found to be 7.5%[3]. The 2011 census, which used a binary question, reported disability in Bhopal Municipality to be 4.3% among people aged over 15 years[4]. Unpublished data from three blindness surveys undertaken in rural districts in India found WG disability among the over 50s to be between 12.9% and 28.6% and non-visual disability to be between 9.4% and 19.5%.

Limitations

A major limitation of the dataset is the limited number of variables collected: age, sex, location, programme period and disability are interesting but extremely limited for investigating complex phenomena such as disability and access to healthcare. Other personal data such as education, household structure and socio-economic background would be useful to build a more complete picture. The data is not linked to healthcare records, meaning that we cannot tell the reasons for accessing care, and thus whether people accessing services have vision problems and the nature and seriousness of these problems. Although the WGSS is currently the best available short measure of disability, there remain a number of limitations that affect how we should interpret the data[5]. The question set is known to be weak at detecting people with learning or mental health difficulties. It may also detect people with short-term or temporary incapacities. The project also experienced difficulties with the Hindi language version of the WGSS and at various points in the data collection cycle, different iterations of the translated tool were in use. Although the changes were not large, they may have affected how the questions were asked or understood and thus may have affected the answers provided.

Although certain changes within the programme between the DD and IEH periods were documented and described above, other changes occurred with little documentation and they may

[3] International Centre for Evidence in Disability (ICED), The Telengana Disability Study, India Country Report, London School of Hygiene and Tropical Medicine (LSHTM) 2014. Available from disabilitycentre.lshtm.ac.uk
[4] censusindia.gov.in/
[5] Madans, J.H. and Loeb, M., 2013. Methods to improve international comparability of census and survey measures of disability. *Disability and Rehabilitation*, *35*(13), pp.1070-1073.

have affected the data. For example, the IEH period deliberately targeted more people with disabilities with outreach camps, but located them in centres where they may be more likely to be found (homes for the visually impaired, deaf schools etc). However, it is possible that even during the DD period, some changes were made to outreach camps scheduled because after staff were sensitised on disability as part of the data pilot, they became more aware of the need to reach more people with services and - consciously or not - changed the service approach to be more inclusive.

Despite our relative confidence in the data, we cannot be sure about its completeness. We know that during busy periods at various services, staff could become overwhelmed with the numbers required to be asked the questions and may not have managed to capture everyone. In those cases, it is possible they may have focused on capturing people with visible disabilities, or that people with disabilities would be more amenable to answering the questions than people without, which may have biased the data to reflect a higher prevalence of disability.

Conclusion

In conclusion, the application of the WGSS in this programme proved to be useful to better understand the profile of patients and the equity of access to eye care services available in the area. The findings suggest that both women and people with disabilities experience problems with reaching hospital services. Therefore, the availability of community-based services such as vision centres and outreach camps continues to be important for reaching these population sub-groups. It is, however, essential to track referrals of those who require secondary level services to better understand whether the differences observed in this study apply only to screening or also to referral uptake. The application of the tool is time consuming and is most useful as a snapshot at different programme stages. Training of data collectors and suppression are critical to ensure high quality of data. Finally, future research is needed to collect additional patient information, in particular education, socio-economic background, household structure and clinical diagnoses, to better understand the relationship between patient characteristics and uptake of services and/or health outcomes.

Appendices

Appendix 1: Table describing the data collected in full and differences between two periods

		Total	DD 2014/2015	IEH 2016/2017	Difference between the two periods
Variable		**Number (%)**	**Number (%)**	**Number (%)**	**Odds ratio (p-value)**
All people		71,014 (100.0)	28,300 (39.9)	42,714 (60.2)	n/a
Sex	Male	32,325 (45.5)	13,757 (48.6)	18,568 (43.5)	-
	Female	38,638 (54.4)	14,531 (51.4)	24,107 (56.5)	1.2 (<0.001)
Age		Mean 41 (range 0-110)	Mean 45 (range 0-110)	Mean 38 (range 0-110)	0.98 (<0.001)
Age groups	<18	7,397 (10.4)	1,108 (3.9)	6,289 (14.7)	-
	18-49	39,579 (55.7)	15,642 (55.3)	23,937 (56.1)	0.3 (<0.001)
	50+	24,031 (33.8)	11,547 (40.8)	12,484 (29.2)	0.2 (<0.001)
Location	Hospital	23,913 (33.7)	17,827 (63.0)	6,086 (14.3)	-
	Vision centre	11,753 (16.6)	3,407 (12.0)	8,346 (19.5)	7.2 (<0.001)
	Outreach camp	35,348 (49.8)	7,066 (25.0)	28,282 (66.2)	11.7 (<0.001)
Are you disabled?	No	51,542 (99.0)	27,090 (99.5)	24,452 (98.4)	-
	Yes	518 (1.0)	131 (0.5)	387 (1.6)	3.3 (<0.001)
WG disability	No	49,604 (74.7)	23,110 (84.9)	26,494 (67.7)	-
	Yes	16,781 (25.3)	4,110 (15.1)	12,671 (32.3)	2.7 (<0.001)
WG non-visual disability	No	56,868 (85.7)	25,193 (92.6)	31,675 (80.9)	-
	Yes	9,513 (14.3)	2,026 (7.4)	7,487 (19.1)	2.9 (<0.001)

Appendix 2: Table describing the differences between people with and without (WG) disabilities

		Disabled	Not disabled	Difference compared with not disabled	Non-visual disability	Not non-visually disabled	Difference compared with not non-visual disabled
Variable		**Number (%)**	**Number (%)**	**Odds ratio (p-value)**	**Number (%)**	**Number (%)**	**Odds ratio (p-value)**
All people		16,781 (25.3)	49,604 (74.7)	n/a	9,513 (14.3)	56,868 (85.7)	n/a
Sex	Male	3,937 (22.9)	23,304 (77.1)	-	3,511 (11.6)	26,727 (88.4)	-
	Female	9,840 (27.2)	26,286 (72.8)	1.3 (<0.001)	5,999 (16.6)	30,126 (83.4)	1.5 (<0.001)
Age		Mean 52	Mean 40	1.04 (<0.001)	Mean 53	Mean 41	1.04 (<0.001)
Age groups	<18	86 (3.0)	2,769 (97.0)	-	47 (1.7)	2,804 (98.4)	-
	18-49	7,242 (18.3)	32,282 (81.7)	7.2 (<0.001)	3,891 (9.8)	35,633 (90.2)	6.5 (<0.001)
	50+	9,451 (39.4)	14,548 (60.6)	20.9 (<0.001)	5,574 (23.2)	18,425 (76.8)	18.0 (<0.001)
Location	Hospital	1,783 (7.5)	22,130 (92.5)	-	180 (0.8)	23,733 (99.3)	-
	Vision centre	3,302 (32.0)	7,016 (68.0)	5.8 (<0.001)	2,151 (20.9)	8,167 (79.2)	34.7 (<0.001)
	Outreach camp	11,696 (36.4)	20,458 (63.6)	7.1 (<0.001)	7,182 (22.3)	24,968 (77.7)	37.9 (<0.001)
Project period	DD period	4,110 (15.1)	23,110 (84.9)	-	25,193 (92.6)	31,675 (80.9)	-
	IEH period	12,671 (32.4)	26,494 (67.7)	2.7 (<0.001)	2,026 (7.4)	7,487 (19.1)	2.9 (<0.001)
Are you disabled?	No	12,930 (25.1)	38,602 (74.9)	-	44,151 (85.7)	335 (64.7)	-
	Yes	278 (53.7)	240 (46.3)	3.5 (<0.001)	7,381 (14.3)	183 (35.3)	3.3 (<0.001)

Appendix 3: Table describing the difference between males and females answering the disability questions

		Male	Female	Difference
Variable		Number (%)	Number (%)	Odds ratio (p-value)
All people		32,325 (45.6)	38,638 (54.4)	n/a
Age		Mean 42	Mean 40	1.0 (<0.001)
Age groups	<18	3,440 (10.6)	3,925 (10.2)	-
	18-49	17,287 (53.5)	22,279 (57.7)	1.1 (<0.001)
	50+	11,595 (35.9)	12,430 (32.2)	0.9 (0.02)
Location	Hospital	12,670 (39.2)	11,242 (29.1)	-
	Vision centre	4,553 (14.1)	7,176 (18.6)	1.8 (<0.001)
	Outreach camp	15,102 (46.7)	20,220 (52.3)	1.5 (<0.001)
Project period	DD period	13,757 (42.6)	14,531 (37.6)	-
	IEH period	18,568 (57.4)	24,107 (62.4)	1.2 (<0.001)
WG disability	No	23,304 (77.1)	26,286 (72.8)	-
	Yes	6,937 (22.9)	9,840 (27.2)	1.3 (<0.001)
WG non-visual disability	No	26,727 (88.4)	30,126 (83.4)	-
	Yes	3,511 (11.6)	5,999 (16.6)	1.5 (<0.001)
Are you disabled?	No	23,634 (98.8)	27,890 (99.2)	-
	Yes	279 (1.2)	239 (0.9)	0.7 (<0.001)