# Human Resources and Infrastructure

# for Pediatric Eye Care Services in

# Sulawesi Selatan, Indonesia

# 2019

## A Report

# ACKNOWLEDGEMENTS

We take this opportunity to thank all the stake holders involved in this situational analysis of paediatric eye care in Sulawesi Selatan.

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In the end, it was coordinated team work that made this work possible and enjoyable. We hope that the data and the recommendations are useful to further augment the existing paediatric eye care services in Sulawesi Selatan province, Indonesia and that the data generated acts as the baseline for future comparisons on progress of paediatric eye care in Indonesia.

***THE SULAWESI SELATAN PAEDIATRIC EYE CARE***

***SITUATIONAL ANALYSIS TEAM***

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# ABBREVIATIONS

| | |
|---|---|
| CT | Computerized Tomography |
| EMR | Electronic Medical Records |
| GP | General Practitioner |
| MBBS | Medicinae Baccalaureus, Baccalaureus Chirurgiae |
| MCH | Maternal & Child Health |
| MLOP | Mid-level ophthalmic personnel |
| MRI | Magnetic Resonance Imaging |
| NICU | Neonatal Intensive Care Unit |
| OCT | Optical Coherence Tomography |
| OP | Out Patient |
| OR | Operating Room |
| PHC | Primary Health Care Centres |
| RAAB | Rapid assessment of Avoidable Blindness |
| ROP | Retinopathy of Prematurity |
| SD | Standard Deviation |
| VA | Visual Acuity |
| VEGF | Vascular Endothelial Growth Factor |

## CHAPTERS

# EXECUTIVE SUMMARY

## Background

Childhood blindness and visual impairment is a priority area for achieving the goals of Vision2020: The Right to Sight initiative. For planning and delivering need-based services it is essential to generate evidence to support the same. Without such evidence, a robust and effective plan cannot be initiated. It would not optimize the resources available nor meet the needs of the population. Therefore, a situational analysis was carried out in Sulawesi Selatan in 2019 to identify the human resource and infrastructure gaps in paediatric eye care services and the existing patient load and available facilities. Such a gap analysis was never conducted in the Sulawesi Selatan region earlier and it was imperative that such data was generated which could act as a baseline for future plans for paediatric eye care in the region.

## Objectives

1. Assess the existing human resources and infrastructure capacity of the eye hospitals in Sulawesi Selatan to delivery pediatric eye care services.
2. Ascertain the future needs for strengthening pediatric eye care services in Sulawesi Selatan.
3. Suggest modalities for augmenting pediatric eye care services in Sulawesi Selatan.

## Methodology

A technical coordination committee was constituted at the provincial level to oversee the implementation of the project. The project was initiated in February 2019 and the analysis was completed in February 2020.

A mixed methods approach was adopted to collect the evidence. Both primary and secondary data sources were used.

Four teams of investigators under the leadership of a paediatric eye care senior consultant were constituted.

A consensus approach was used to finalize the questionnaire schedules. Data collection forms used to collect similar information in other countries like India and Nepal earlier were evaluated and adapted to the needs of the present study. All questionnaire schedules were first developed in English and translated and back-translated to assess whether the essence was uniform. Each questionnaire schedule was then pretested on a small sample of hospitals.

Questionnaires were sent to the Heads of institutions in eye hospitals, specialty pediatric care facilities and primary care facilities. Responses were facilitated by telephonic follow up when responses were not received.

A customized soft-ware was developed and all data that was entered could be downloaded in real time at the data support centre at Hyderabad, India.

Prior to data collection an intensive training session was conducted. The training also utilized mock interviews to familiarize the researchers with the questionnaires.

Quality assurance was ensured by monitoring the teams during data collection and by incorporating consistency and range checks in the customized software. Data triangulation was undertaken by physical observation of facilities and infrastructure at randomly selected hospitals where the observed data was compared with the reported data.

## Observations

### *Response Rate*

The response rates were consistently high (> 90%) for all facilities. The response rate was 92.4% for primary care facilities and 100% for those hospitals providing pediatric eye care specialty services.

### *Primary Health Care facilities*

424 primary eye care facilities were assessed for the status of the physical space for eye examination, skills of personnel and the availability of functional equipment. Though physical space for eye examination was available in 72.4% of the facilities it was rated as 'good' only in a quarter of the facilities where physical space was available. Only 12% of the facilities had a full complement of functional basic eye examination equipment. Basic equipment referred to the availability of functional penlight, ruler, vision testing charts, trial set, corneal loupe, Schiotz tonometer and an Ishihara colour vision chart. Visual acuity measurement tools were available in95.3% of the primary care facilities. Luwu Timur district had best profile in relation to functional equipment while Maros reported significant paucity of functional equipment.

A general practitioner was available in 95.5% of the primary care facilities while 98.6% of facilities had a special sensory officer. Nurses were available in 98.6% of the primary care facilities.

The evidence shows that Sulawesi Selatan has a functioning primary health care network and this affords a great opportunity to engage this level of service delivery in enhancing paediatric eye care

services in the province. There is a need to identify specific training needs of the primary personnel and provide them with functional equipment to identify and refer children who need further attention.

***Multispecialty hospitals with an eye department or dedicated Eye Hospitals***

A total of 58 eye departments/ eye hospitals were identified for data collection. 55.2% of these hospitals were public funded (government) while 44.8% were privately owned. 93.1% were secondary level facilities. 87.9% were eye departments embedded in multi-specialty hospitals. 75.9% were accredited hospitals while 74.1% were Type C or Type D hospitals. Only 13.8% were teaching hospitals.

Eight six percent of the responding hospitals reported that they had in-patient facilities. Multispecialty hospitals, public-funded hospitals, teaching hospitals and accredited hospitals reported bed availability in a higher proportion compared to others. Of all beds, overall, 6.9% were dedicated for eye admissions. Nearly a quarter (22.4%) of the hospitals reported a 24x7 emergency service. 89.7% reported availability of operating room for eye surgeries. An optical unit was available in only 10% of hospitals.

None of the 58 facilities reported the availability of a contact lens unit. The distribution of facilities across the districts was very variable. A total of 8422 beds for an estimated population of Sulawesi Selatan(2019) of 8,851,240 translates to 95.1 beds per 100,000 population. The availability of dedicated beds for ophthalmology was 0.6% of all beds reported by the hospitals. Only 5.2% hospitals reported dedicated beds for ophthalmology. Even among standalone eye hospitals, only 14.3% reported availability of inpatient facilities.

Neonatal intensive care units (NICUs) were reported by 29.3% of the responding hospitals.

More than half the responding hospitals reported that they had a patient tracking system available, mostly telephonic.

Availability of functional equipment for basic eye examination was mostly good. The same was the case with the basic refraction equipment and colour-vision tests. More than a third had paediatric vision testing charts available and nearly a third had functional indirect ophthalmoscopes. These hospitals have the potential to be scaled up to paediatric eye care if provided requisite equipment and skills.

A full complement of functional basic diagnostic equipment was not reported by any of the reporting hospitals. A majority had ≥ 50% of the functional equipment. 75% of the hospitals reported having a full complement of equipment for glaucoma diagnostics.

Availability of functional critical anaesthesia was reported only by 13.8% of the responding hospitals.

91.4% of the responding hospitals reported the availability of a full time GP, while 79.3% reported a full time ophthalmologist being available. Optometrists were scarce in most hospitals. Counsellors and dedicated administrative personnel for the eye department/ hospitals were also scarcely reported. Overall the availability of ophthalmic counsellors, computer operators, ophthalmic assistants and dedicated administrators was poor across all sectors. Most hospitals reported on the availability of ophthalmic nurses. 75.9% hospitals reported availability of full time anesthetists. Availability of neonatologists was reported by 81% of the hospitals.

More than 90% of hospitals provided data on outpatient consultations and admissions in one calendar year (2018). The mean outpatient consultations were 3778.1 (±468) while the mean was 1647.2 (±309) for ophthalmology outpatient consultations. Public-funded hospitals, accredited hospitals, Type C hospitals and secondary level facilities reported significantly higher workloads in the outpatient clinics and for admissions.

A total of 72 ophthalmologists and 97 paediatricians were reported to be working at the responding hospitals. 79.2% of the ophthalmologists and 36.1% of the neonatologists were nominated for training programs

***Paediatric specialty eye hospitals***

Eleven hospitals were identified as providing paediatric specialty eye care. The specialty hospitals were predominantly in the public funded sector. Of the 11 hospitals, 4 (36.4%) are in Makassar, 3 (27.3%) in Palopo and 2 (18.2%) each in Bulukumba and Pare Pare.

A dedicated paediatric eye care unit was available in 36.4% of the hospitals. Dedicated space for examining children was available in 36.4% hospitals. When dedicated space for consultation was available, the condition of the same was rated as 'good'. A separate area to ensure privacy for the child's examination was available in 36.4% and all these facilities were assessed to be in good condition. A similar proportion reported availability of space for testing children's vision and 75% of these spaces were reported to be in good condition. Paediatric refraction facility was reported by 45.4% hospitals of which 60% were assessed as in good condition.

Child-friendly infrastructure is a necessity in paediatric hospitals. These include dedicated infant feeding and child play areas. Only 18.2% reported availability of dedicated infant feeding area and 36.4% hospitals reported availability of child play area. There was poor availability of spectacle dispensing unit for children, low vision facility for children and child rehabilitation services.

Operation theatre facilities for paediatric eye surgery were reported by all the 11 hospitals. None of the hospitals depended completely on electronic medical records. Only 20% hospitals reported that they shared a hard copy of the examination findings and treatment given to the child.

63.7% of the hospitals reported that they had a NICU attached to the hospital or where they were providing services for Retinopathy of Prematurity (ROP). Though 63.6% of the hospitals were involved in screening for ROP, only 36.4% were treating ROP themselves. The predominant mode of ROP screening was for an eye team visiting the NICU to screen for ROP. This was not however the case in the privately-funded hospitals. This is not a desirable practice and needs to be changed at the earliest. The availability of written protocols for paediatric care and for ROP specifically was poor. There is a need to institute standard operating protocols to improve the quality of care and adherence to established norms. In nearly half the hospitals, ROP counselling was routinely done by ophthalmologists as dedicated counsellors were not available. Reassuringly, 81.8% hospitals reporting having specific child protection policies in place.

81.8% of the hospitals reported that they had dedicated ophthalmologists working at the hospitals. Only 36.4% reported that they employed optometrists. 81.8% hospitals reported availability of ophthalmic nurses. Only 63.6% hospitals reported having a neonatologist.

Continuing professional enhancement was not observed to be a priority for the paediatric specialty eye hospitals as less than half had nominated ophthalmologists for further augmentation of skills or knowledge. 25% of those nominated for training were for strabismus.

Five hospitals reported undergraduate medical training program while three reported an ophthalmology residency program.

Five hospitals provided data on out patient load. These hospitals reported a mean of 4222 consultations per hospital per year. Only four hospitals could provide age disaggregated data. Three hospitals could provide information on paediatric admissions. These hospitals reported a mean number of admissions per hospital of 543.7 in 2018. Most of the paediatric admissions were among those aged 0-5 years compared to those aged 6-11 years or older. Age-disaggregated data was available from only 2 hospitals.

Adnexal disease was the commonest diagnosis reported in the outpatient consultations followed by refractive errors and paediatric cataract.

Data capture of paediatric surgeries was poor and needs to be urgently addressed.

None of the hospitals had all basic functional equipment available though most reported more than 50% of the full complement of basic equipment. Low vision assessment and management equipment was not routinely available.

Data triangulation showed that, overall there was good agreement between data provided by the hospitals and that examined during an observational visit. The good agreement on most parameters shows that the data provided by the hospitals is of good quality.

1. Ascertain the future needs for strengthening pediatric eye care services in Sulawesi Selatan.
2. Suggest modalities for augmenting pediatric eye care services in Sulawesi Selatan.

**Future Needs**

The evaluation provided leads towards existing strengths and limitations in addressing the Vision2020 goals for Sulawesi Selatan and also provides insights for developing a road map for paediatric eye care as childhood blindness is a priority area for eliminating avoidable blindness.

The evidence generated should be used as a baseline for future interventions and plans for augmenting childhood blindness control activities. The study also highlighted specific skills and infrastructure that needs attention. Any plan for improving paediatric eye care services will have to consider competencies at all levels of care, especially so in Indonesia where the referral process is more systematised compared to many other low and middle income countries.

At the primary level though a large number of general nurses have been trained in primary eye care, they are not confident that they can handle paediatric cases independently. This needs to be addressed so that they can play an effective role. If need be, regular professional up gradation programmes can be conducted at periodic intervals so that their confidence levels increase. Mentorship by ophthalmologists at the secondary level can also help in this regard. Adequate space and support infrastructure are available at this level and the use of the same for primary eye care including refraction can be optimized. The sustainability of a paediatric eye care service is dependent on the volume of referrals to higher facilities and therefore the primary care personnel play an important role in the referral process. Human resources are adequate to support eye care and pediatric eye care services in Sulawesi Selatan but only a small proportion

have been trained to tackle pediatric eye care needs. Efforts should be made to train medical officers, sensory officers and general nurses at the primary care level in a systematic phased manner.

In a phased manner, dedicated beds for paediatric eye care should be made available at the secondary level. For operationalizing this, ophthalmologists at the secondary level need to be adequately skilled and supported by an enabling environment and infrastructure. Advocacy is required with senior policy makers to ensure this. Once the population is aware of the available facilities and competencies, they will start using these facilities. Screening for ROP and skilling of neonatal teams for prevention of risk factors for ROP needs to be ensured at this level. This needs to be done in a phased manner.

At the tertiary level, all specialty hospitals providing paediatric eye care services should have dedicated paediatric eye care units, which is currently not the case. There is a dearth of equipment and skills for services like low vision, strabismus and ROP at many of the specialty tertiary hospitals providing paediatric eye care services.

Child tracking and follow up scheduling is not available in most of the secondary and tertiary care facilities and this needs to be augmented for better visual outcomes. Similarly standard operating protocols were not available and need to be strictly enforced to improve quality of care.

**Modalities for augmenting paediatric eye care services**

For a vibrant responsive paediatric eye care service for Sulawesi Selatan it is imperative that all levels of health care delivery are included in the service matrix, from the primary to specialty eye care.

Skills and infrastructure at the primary level need to be monitored regularly and units and personnel needing additional inputs should be identified and supported. This will improve delivery of paediatric eye care services. There is no need for all children in need of eye care services to be referred to the specialty care centres as many eye problems including foreign bodies, refraction, self-limiting infections etc. can be effectively managed at the primary level itself. As nurses are already involved in school vision screening programs, investment in them will yield good results.

Paediatric eye care services should be scaled up across the province in a phased manner. Districts with better functional equipment and availability of trained resources should be prioritized first in developing a comprehensive paediatric eye care service. Even within districts mapping should be

done primary care facility wise so that those with adequate functional equipment and human resources can be taken up first.

Efforts should be made to establish dedicated paediatric inpatient facilities at secondary hospitals with access to a paediatric oriented or paediatric trained ophthalmologist. This again should be done in a phased manner. At this level, augmenting skills, equipment and infrastructure will need to be planned in such a manner that there is adequate geographic spread across the province in the availability of paediatric eye care services.

Support for ROP screening and management services are urgently required as there is an increasing magnitude of ROP in Indonesia.

At the tertiary level, 11 hospitals were identified as providing specialty paediatric services. However dedicated paediatric eye care facilities were lacking in most of these hospitals. This needs to be addressed urgently. A child-friendly infrastructure and service needs to be targeted. Separate specialty paediatric eye units need to be established across the province. This could be phased over the next five years. Dedicated child-friendly examination and rooming facilities need to be established. At this level of care, sub-specialties like low vision care, strabismus care and ROP treatment have to be made available. There could be a graded system of specialty accreditation which could differentiate between full-fledged paediatric specialty hospitals and those which are paediatric eye care oriented hospitals. Based on a set of criteria that can be devised locally, the oriented hospitals can be scaled up into fully functional paediatric speciality eye hospitals over time.

Digital data capture and retrieval systems for patient data needs to be initiated so that a child's records can be accessed at different levels of health care. This also help tracking and follow-up systems for children who need constant follow up and care after a paediatric eye care intervention.

Standard operating protocols (SOP) are critical for improving quality of care and should be readily available at all clinical stations. An empowered team should be given this responsibility so that such SOP are developed within a year.

# INTRODUCTION

## Background

Indonesia is an archipelago comprising 18,307 islands with over 238 million people, making it the world's fourth most populous country where poverty remains widespread. It encompasses 33 provinces and 1 Special Administrative Region.

Sulawesi Selatan(Sulawesi Selatan) is one of the 34 provinces of Indonesia and is located in the southern peninsula of Sulawesi (Figure 1). The population of Sulawesi Selatan (2019) was 8,819,500. It is the sixth most populous province in Indonesia. Sulawesi Selatan is located at 4°20'S 120°15'E and covers an area of 45,764.53 square kilometres. Sulawesi Selatan is comprised of 21 regencies and three independent cities (Makassar; Palopo; Parepare). Sulawesi Selatan has a high Human Development Index (0.709) and the capital city of Makassar has a very high human development index (0.817).

**Figure 1: Sulawesi Selatan**

## Indonesian Health System

The Indonesian health system is primarily a publicly managed system, widely decentralized and supported by various types of health insurance schemes. The Health department in each administrative area is responsible to manage the health services in the respective areas. The hospitals in Indonesia are divided into four categories: A, B, C and D. Category A and B are tertiary hospitals located in big cities; C and D are usually secondary hospitals situated at the district level. Indonesia is characterised by a dual service delivery health system that allows public health personnel to work both in the government and the private sector simultaneously.

Primary health care infrastructure is known as *puskesmas*. *Puskesmas* are the spearheads of basic healthcare services provided by the government. Puskesmas along with their supporting units, such as *posyandu, pustu*, *pusling*, *polindes* and *posbindu*, have an important role because they are the main health services that reach communities down to the village level and which are relatively affordable for the poor. Sulawesi Selatan has a ratio of 17.82 physicians per 100,000 populations, which is lower than many provinces of Indonesia [1]. Indonesia has 2,693 ophthalmologists (including 569 residents) against the need of 4,000. This scarce number is again distributed unevenly across the country, mostly concentrated in 3-4 major cities [2]. The country does not have any kind of formal programs or policies for developing mid-level ophthalmic professionals (MLOP). General Nurses receive few weeks of training and work as ophthalmic nurse. In 2005, Indonesia ratified the Vision 2020 global initiative and formed a National Committee for Visual Impairment & Blindness Prevention.

Indonesia is currently updating its National Strategic Plan for Strengthening Health Care Facilities, focusing on accreditation, logistics and physical infrastructures.

## Magnitude of Blindness and Visual Impairment

Evidence from Rapid Assessment of Blindness (RAAB) surveys in Indonesia in 2016 showed that Indonesia has one of the highest prevalence of blindness in the South East Asia Region [3].

The paucity of accurate and adequate data on paediatric eye care services and capacities coupled with lack of information on the prevalence and magnitude of childhood blindness and visual impairment is an important challenge for planning of paediatric eye care services in Indonesia.

Data on prevalence and causes of childhood blindness is available from special schools and community-based rehabilitation in Indonesia [4,5]. A recent study showed that the 77.8% of children in such institutions has avoidable causes of blindness and severe visual impairment and that the lens-related and retina-related causes were the commonest causes of blindness and severe visual impairment [4].

Refractive error related blindness and visual impairment is estimated at 32% [6]. Retinopathy of prematurity has been on the rise with better neonatal care facilities and improved survival of preterm babies. The reported incidence in Indonesia ranged from 18-30% [6].

# PROJECT GOAL AND RATIONALE

## Project Goal

Identify current status and gaps in paediatric eye care services in Rumah Sakit Universitas Hasanuddin , Indonesia with a special focus on human resources and infrastructural capacities and future needs.

## Rationale

To achieve the goals of Vision 2020 it is necessary that evidence be generated to identify gaps and bottlenecks so as to find appropriate solutions which will help policy formulation and effective programme implementation in Sulawesi. Gap analysis for pediatric eye care has never been undertaken earlier in Indonesia and such an analysis is eminently desirable if inputs are to be channelized effectively and efficiently. Once gaps are identified, the country can formulate a scientifically valid response to augment pediatric eye care services.

# OBJECTIVES

1. Assess the existing human resources and infrastructure capacity of the eye hospitals in Sulawesi Selatan to delivery pediatric eye care services.
2. Ascertain the future needs for strengthening pediatric eye care services in Sulawesi Selatan.
3. Suggest modalities for augmenting pediatric eye care services in Sulawesi Selatan.

# METHODOLOGY

The project aimed to harness nation-wide data under the Overall guidance of a Technical Coordination Committee at provincial level.

The project was initiated in February 2019 and the analysis was completed in February 2020.

The study adopted a mixed-methods approach. Secondary data was collected (including policy documents). A complete listing of all hospitals and primary care facilities in Sulawesi Selatan was first completed.

Four teams of research investigators were constituted, each led by a consultant from pediatric eye care, Community Ophthalmology, Low Vision supported by two study investigators (residents in ophthalmology/ interns). One data entry clerk assisted two teams for data entry. A project coordinator and four study supervisors oversaw the data collection.

A detailed set of questionnaires was first developed. There were three questionnaires:

1. Pediatric eye care specialty questionnaire
2. Hospital Questionnaire
3. Primary Health Care facilities questionnaire.

All questionnaires were developed in English and then translated into the local language. The translated questionnaires were then back-translated into English. Discrepancies in the translations were addressed before being piloted. Each questionnaire was then pretested with a sample of hospitals.

Each of the three questionnaires had multiple sections to facilitate data collection:

1. Basic Information regarding the hospital
2. Hospital Infrastructure
3. Emergency preparedness
4. Equipment Inventory
5. Availability and utilization of clinical protocols
6. Human resource details
7. Medical and Ophthalmic Education facilities
8. Hospital Statistics

Self-administered questionnaires were sent to the Heads of institutions in eye hospitals, specialty paediatric care facilities and primary care facilities. Wherever responses were not received, telephonic follow-ups were conducted to convince the potential responders to complete the process.

All data was entered into a customized data software module developed in MS Access. The data was downloaded in real time by a data management team in Hyderabad, India. The software had inbuilt range and consistency checks to improve quality of data. The entered data was regularly monitored and concerns if any were shared with the study investigators in Makassar. The project office was located at the Rumah Sakit Universitas Hasanuddin and this office coordinated the entire project.

## Training

All the teams had an intensive three-day training session followed by mock interviews at the start of the data collection. All the questions were also discussed in detail during the training and discrepancies resolved before being piloted.

## Definitions

For the purpose of the study, the following operational definitions were used:

Ownership: All public funded hospitals were categorized as Government owned. These included Army, police, state owned hospitals and hospitals run by the Ministries. All other private for profit hospitals were categorized as Private hospitals.

Status: Hospitals which were standalone eye practices were classified as Standalone/ Exclusive eye hospitals while all hospitals where ophthalmology services were housed in a general multispecialty hospital were classified as Multispecialty hospitals.

Teaching Status: All eye hospitals/ departments providing undergraduate or postgraduate residency programs in ophthalmology/ optometry were labelled as

teaching hospitals while all other hospitals which were only providing eye care services were labelled as 'only service' hospitals.

Accreditation Status: All hospitals which were recognized and certified by the Sulawesi Selatan authorities were categorized as accredited hospitals.

Hospital Type: In Indonesia, hospitals are classified in 4 categories:

*Type A*: Consists of 4 basic specialities (Internal Medicine, Paediatrics, Gynaecology, Surgery) with 5 supporting medical services (Anaesthesia, Radiology, Medical Rehabilitation, Anatomic Pathology, Clinical Pathology), 12 other specialist services and 13 sub specialists. Additionally, they have at least 18 doctors, 4 dentists and a minimum of 400 beds.

*Type B*: Consists of 4 basic specialities (Internal Medicine, Paediatrics, Gynaecology, Surgery) with 4 supporting medical services (Anaesthesia, Radiology, Medical Rehabilitation, Anatomic Pathology), 8 other specialist services and 2 sub-specialist services. Additionally, basic medical services have at least 12 doctors, 3 dentists and a minimum of 200 beds.

*Type C*: Consists of 4 basic specialities (Internal Medicine, Paediatrics, Gynaecology, Surgery) with 4 supporting medical services (Anaesthesia, Radiology, Medical Rehabilitation, Anatomic Pathology). Additionally, basic medical services have at least 9 doctors, 2 dentists and a minimum of 100 beds.

*Type D*: Consists of a minimum of 2 basic specialities amongst 4 specialities (Internal Medicine, Paediatrics, Gynaecology, Surgery). Additionally, basic medical services have at least 4 doctors, 1 dentist and a minimum of 50 beds.

Hospital Service level: All hospitals providing sub specialty eye services were labelled as tertiary hospitals while all hospitals providing only general eye services were labelled as secondary hospitals.

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## Quality Assurance

A number of steps were taken to assure quality. This included intensive training, customized data entry software module with built-in range and consistency checks, monitoring of data collection in the field and data cleaning before analysis.

## Data Triangulation

To validate the accuracy and completeness of data, research teams randomly identified some institutions and visited them to observe the workflow and skill of personnel and the practices followed in provided pediatric eye care.

# OBSERVATIONS

Data is being presented in the following sub sections:

- Primary Health Care facilities
- General and Eye Hospital data
- Specialty pediatric eye care facilities data
- Triangulation of data.

## Response Rates

There were a total of 459 primary health care facilities listed in Sulawesi Selatan of which information was collected from 92.4% facilities (424). Of 59 hospitals identified as providing secondary level eye care services, 98.3% (58) could be covered. All 11 hospitals identified as providing paediatric eye care services were covered during the situational analysis (100% response). Therefore the response rates were uniformly high at all levels of care.

# SECTION A: PRIMARY HEALTH CARE FACILITIES

A total of 424 primary eye care facilities were assessed for the status of the physical space for eye examination and the availability of functional equipment (Table 1). In 72.4% space was available for eye services. But the space was rated as 'good' by only a quarter. Only 12% of the facilities had a full complement of functional basic eye examination equipment.

Functional visual acuity measurement tools were the most commonly reported functional equipment at the primary level (Table 2). Only a third reported availability of a functional Schiotz tonometer.

Primary facilities in most districts had adequate space for eye related activities but many did not have fully functional equipment (Table 3). Luwu Timur district had best profile in relation to functional equipment while Maros reported significant paucity of functional equipment.

**Table 1: Physical Infrastructure and functional equipment for eye care at primary level**

| **Parameter** | **Frequency** | **%** |
|---|---|---|
| No. of primary care facilities reported | 424 | |
| Availability of space for eye services | 307 | 72.4% |
| Available space good for eye examination | 75 | 24.4% (75/307) |
| Available space acceptable for eye examination | 116 | 37.8 % (116/307) |
| Available space inadequate for eye examination | 116 | 37.8 % (116/307) |
| Number of facilities with all basic eye examination equipment available (Penlight+Ruler+Vision Chart+Trial Set+Loupe+ Schiotz Tonometer+Ishihara Chart) | 51 | 12.0% |
| Number of facilities with ≥ 50% of basic eye examination equipment available (Penlight+Ruler+Vision Chart+Trial Set+Loupe+ Schiotz Tonometer+Ishihara Chart) | 193 | 45.6% |
| Number of facilities with < 50% of eye examination equipment available (Penlight+Ruler+Vision Chart+Trial Set+Loupe+ Schiotz Tonometer+Ishihara Chart) | 180 | 42.4% |

**Table 2: Availability and quantum of functional equipment at primary level**

| **Parameter** | **Frequency (N=424)** | **%** | **Mean functional equipment [Range]** |
|---|---|---|---|
| No. of facilities reporting availability of functional visual acuity measurement tools | 404 | 95.3 | 1.7 [1-5] |
| No. of facilities reporting availability of functional flash light | 395 | 93.2 | 1.8 [1-6] |
| No. of facilities reporting availability of functional Ishihara book | 376 | 88.7 | 1.5 [1-6] |
| No. of facilities reporting availability of functional ruler | 360 | 85.1 | 2.0 [1-12] |
| No. of facilities reporting availability of functional trial lens set | 229 | 54.0 | 1.1 [1-4] |
| No. of facilities reporting availability of functional loupe | 238 | 56.1 | 1.2 [1-6] |
| No. of facilities reporting availability of functional Schiotz tonometer | 146 | 34.4 | 1.2 [1-4] |

**Table 3: District distribution of functional equipment status at primary care facilities**

| District | Number of PHCs | Space availability for eye work | PHC with all functional basic equipment N (%) | PHC with ≥ 50% functional basic equipment N (%) | PHC with < 50% functional basic equipment N (%) |
|---|---|---|---|---|---|
| Bantaeng | 13 | 13(100.0) | 1(7.7) | 8(61.5) | 4(30.8) |
| Barru | 12 | 4(33.3) | 0 | 6(50.0) | 6(50.0) |
| Bone | 38 | 10(26.3) | 0 | 12(31.6) | 26(68.4) |
| Bulukumba | 15 | 15(100.0) | 4(26.7) | 7(46.7) | 4(26.7) |
| Enrekang | 14 | 6(42.9) | 2(14.3) | 7(50.0) | 4(28.6) |
| Gowa | 26 | 25(96.2) | 5(19.2) | 13(50.0) | 8(30.8) |
| Jeneponto | 19 | 17(89.5) | 5(26.3) | 5(26.3) | 9(47.4) |
| Kepulaun Selayar | 13 | 13(100.0) | 2(15.4) | 5(38.5) | 6(46.1) |
| Luwu | 16 | 16(100.0) | 3(18.7) | 12(75.0) | 1(6.3) |
| Luwu Timur | 17 | 17(100.0) | 6(35.3) | 11(64.7) | 0 |
| Luwu Utara | 9 | 9(100.0) | 0 | 3(33.3) | 6(66.7) |
| Makassar | 46 | 35(76.1) | 3(6.5) | 26(56.5) | 17(37.0) |
| Maros | 11 | 9(81.8) | 0 | 3(27.3) | 8(72.7) |
| Palopo | 13 | 13(100.0) | 2(15.4) | 9(69.2) | 2(15.4) |
| Pangkajene dan Kepu | 20 | 20(100.0) | 1(5.0) | 4(20.0) | 15(75.0) |
| ParePare | 6 | 1(16.7) | 0 | 4(66.7) | 2(33.3) |
| Pinrang | 16 | 6(37.5) | 2 (12.5) | 7(43.7) | 7(43.7) |
| Sidenreng Rappang | 14 | 5(35.7) | 0 | 6(42.9) | 8(57.1) |
| Sinjai | 16 | 3(18.8) | 3(18.7) | 8(50.0) | 5(31.2) |
| Soppeng | 17 | 3(17.6) | 3(17.6) | 6(35.3) | 8(47.0) |
| Takalar | 14 | 14(100.0) | 3(21.4) | 1(7.1) | 10(71.4) |
| Tana Toraja | 16 | 14(87.5) | 3(18.7) | 7(43.7) | 6(37.5) |
| Toraja Utara | 20 | 19(95.0) | 1(5.0) | 12(60.0) | 7(35.0) |
| Wajo | 23 | 20(87.0) | 4(17.4) | 13(56.5) | 6(26.1) |
| Sulawesi Selatan | 424 | 307(72.4) | 51 (12.0) | 192 (45.3) | 180 (42.4) |

Ishihara charts were reported to be consistently available in most primary care facilities of most districts (Table 4). Vision Charts were the most commonly available functional equipment across the Sulawesi Selatan primary care facilities. Trial sets and Schitoz tonometers were not available in most districts. There was a wide variation across the primary facilities in the districts and there was a lack of a consistent pattern for different functional equipment across districts.

Overall, 95.5% of the Primary Centres had a General Practitioner (GP) currently posted (Table 5). There was a mean of 2 GPs per primary health centre. 12.9% GPs reported being oriented to paediatric eye care. Available statistics showed that there were 9 paediatric oriented GPs per 100,000 population across Sulawesi Selatan with variations across the districts.

Special Sensory Officers play an important role in dealing with visual impairment at the primary health centre level. Excepting 6 PHCs, Special sensory officers were available at all the other PHCs in Sulawesi Selatan(Table 6). Available data showed that there were 5.4 special sensory officers per 100,000 population in Sulawesi Selatan.

A total of 8717 nurses were available at 418 PHCs in the province. 98.6% of PHCs had a nurse currently working at the PHC (Table 7). Only 4.2% nurses were trained in paediatric eye care. Kepulaun Selayar district followed by Palopo districts had the highest number of paediatric trained nurses across the province while Sidenreng Rappang (13.9/100,000) and Makassar (32.8/100,000) had the lowest population proportion of paediatric oriented nurses.

**Table 4: Availability of different functional equipment across the districts**

| District | Number of PHCs | PHC with functional Penlight N (%) | PHC with functional Ruler N(%) | PHC with functional VA chart N(%) | PHC with functional Trial sets N(%) | PHC with functional loupe N (%) | PHC with functional Schiotz N (%) | PHC with functional Ishihara Chart N(%) |
|---|---|---|---|---|---|---|---|---|
| Bantaeng | 13 | 9(69.2) | 12(92.3) | 11(84.6) | 10(76.9) | 4(30.8) | 6(46.2) | 11 (84.6) |
| Barru | 12 | 11(91.7) | 12(100) | 11(91.7) | 0(0) | 7(58.3) | 1(8.3) | 12 (100) |
| Bone | 38 | 32(84.2) | 33(86.8) | 35(92.1) | 3(7.9) | 11(28.9) | 7(18.4) | 29 (76.3) |
| Bulukumba | 15 | 12(80) | 11(73.3) | 15(100) | 9(60) | 10(66.7) | 8(53.3) | 13 (86.7) |
| Enrekang | 14 | 13(92.9) | 14(100) | 14(100) | 5(35.7) | 6(42.9) | 4(28.6) | 14 (100) |
| Gowa | 26 | 26(100) | 23(88.5) | 26(100) | 19(73.1) | 113(434.6) | 6(23.1) | 23 (88.5) |
| Jeneponto | 19 | 15(78.9) | 17(89.5) | 18(94.7) | 12(63.2) | 6(31.6) | 7(36.8) | 14(73.7) |
| Kepulaun Selayar | 13 | 11(84.6) | 11(84.6) | 12(92.3) | 5(38.5) | 6(46.2) | 6(46.2) | 9 (69.2) |
| Luwu | 16 | 15(93.8) | 16(100) | 16(100) | 7(43.8) | 16(100) | 7(43.8) | 15 (93.8) |
| Luwu Timur | 17 | 17(100) | 17(100) | 17(100) | 10(58.8) | 17(100) | 7(41.2) | 17 (100) |
| Luwu Utara | 9 | 9(100) | 9(100) | 8(88.9) | 1(11.1) | 4(44.4) | 1(11.1) | 4 (44.4) |
| Makassar | 46 | 42(91.3) | 39(84.8) | 41(89.1) | 31(67.4) | 16(34.8) | 4(8.7) | 45 (97.8) |
| Maros | 11 | 8(72.7) | 7(63.6) | 9(81.8) | 2(18.2) | 5(45.5) | 1(9.1) | 10 (90.9) |
| Palopo | 13 | 13(100) | 13(100) | 13(100) | 9(69.2) | 9(69.2) | 3(23.1) | 13 (100) |
| Pangkajene dan Kepu | 20 | 15(75) | 20(100) | 17(85) | 3(15) | 7(35) | 1(5) | 17 (85) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ParePare | 6 | 5(83.3) | 6(100) | 5(83.3) | 5(83.3) | 2(33.3) | (0) | 6 (100) |
| Pinrang | 16 | 15(93.8) | 12(75) | 16(100) | 8(50) | 4(25) | (0) | 14(87.5) |
| Sidenreng Rappang | 14 | 12(85.7) | 12(85.7) | 12(85.7) | 0(0) | 6(42.9) | 3(21.4) | 12(85.7) |
| Sinjai | 16 | 16(100) | 10(62.5) | 14(87.5) | 7(43.8) | 13(81.3) | 10(62.5) | 13 (81.3) |
| Soppeng | 17 | 13(76.5) | 8(47.1) | 16(94.1) | 8(47.1) | 10(58.8) | 8(47.1) | 17 (100) |
| Takalar | 14 | 10(71.4) | 10(71.4) | 11(78.6) | 4(28.6) | 6(42.9) | 3(21.4) | 12 (85.7) |
| Tana Toraja | 16 | 15(93.8) | 12(75) | 15(93.8) | 4(25) | 11(68.8) | 6(37.5) | 15 (93.8) |
| Toraja Utara | 20 | 16(80) | 18(90) | 16(80) | 13(65) | 7(35) | 3(15) | 16 (80) |
| Wajo | 23 | 21(91.3) | 17(73.9) | 23(100) | 11(47.8) | 13(56.5) | 12(52.2) | 22 (95.7) |
| Sulawesi Selatan | 424 | 371(87.5) | 359 (84.7) | 391(92.2) | 186(43.9) | 219(51.7) | 114(26.9) | 372(87.7) |

**Table 5: Availability of General Practitioners at primary care level in different districts**

| District | Number of PHCs | PHCs with GP N (%) | No. of GP | Mean (Range) GP per PHC | GP per 100,000 | GP trained in pediatric eye care N (%) | Population (2019) | Pediatric trained GP per 100,000 |
|---|---|---|---|---|---|---|---|---|
| Bantaeng | 13 | 13 | 18 | 1.4(1-2) | 9.6 | 1(11.1) | 187,626 | 0.5 |
| Barru | 12 | 12 | 31 | 2.6(1-8) | 17.8 | 0 | 174,323 | 0.0 |
| Bone | 38 | 32 (84.2) | 42 | 1.3(1-4) | 5.5 | 8(25.0) | 758,589 | 1.1 |
| Bulukumba | 15 | 15 | 34 | 2.3(1-4) | 8.1 | 4(21.1) | 420,603 | 1.0 |
| Enrekang | 14 | 14 | 29 | 2.1(1-3) | 14.1 | 1(3.7) | 206,387 | 0.5 |
| Gowa | 26 | 26 | 47 | 1.8(1-4) | 6.1 | 17(51.5) | 772,684 | 2.2 |
| Jeneponto | 19 | 19 | 27 | 1.4(1-3) | 7.4 | 2(10.0) | 363,792 | 0.5 |
| Kepulaun Selayar | 13 | 12 (92.3) | 19 | 1.6(1-4) | 14.0 | 5(38.5) | 135,624 | 3.7 |
| Luwu | 16 | 14 (87.5) | 32 | 2.3(1-7) | 8.8 | 2(9.1) | 362,027 | 0.6 |
| Luwu Timur | 17 | 17 | 39 | 2.3(1-3) | 13.0 | 0 | 299,673 | 0.0 |
| Luwu Utara | 9 | 9 | 17 | 1.9(1-3) | 5.4 | 1(7.7) | 312,883 | 0.3 |
| Makassar | 46 | 46 | 123 | 2.7(1-6) | 8.1 | 14(12.4) | 1,526,667 | 0.9 |
| Maros | 11 | 11 | 27 | 2.5(1-4) | 7.6 | 1(4.2) | 353,121 | 0.3 |
| Palopo | 13 | 13 | 40 | 3.1(2-4) | 21.7 | | 184,614 | - |
| Pangkajene dan Kepu | 20 | 20 | 38 | 1.9(1-3) | 11.3 | 4(12.5) | 335,514 | 1.2 |
| ParePare | 6 | 6 | 21 | 3.5(3-4) | 14.5 | 1(6.3) | 145,178 | 0.7 |
| Pinrang | 16 | 16 | 33 | 2.1(1-4) | 8.8 | | 377,119 | - |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sidenreng Rappang | 14 | 14 | 29 | 2.1(1.4) | 9.6 | 1(3.7) | 301,972 | 0.3 |
| Sinjai | 16 | 16 | 31 | 1.9(1-5) | 12.7 | 8(29.6) | 244,125 | 3.3 |
| Soppeng | 17 | 16 (94.1) | 23 | 1.4(1-2) | 10.1 | | 226,991 | - |
| Takalar | 14 | 14 | 24 | 1.7(1-3) | 8.0 | 3(16.7) | 298,688 | 1.0 |
| Tana Toraja | 16 | 15 (93.7) | 17 | 1.1(1-2) | 7.3 | 4(25.0) | 234,002 | 1.7 |
| Toraja Utara | 20 | 13 (65.0) | 16 | 1.2(1-2) | 6.9 | 0 | 231,214 | 0.0 |
| Wajo | 23 | 22 (95.6) | 38 | 1.7(1-4) | 9.6 | 4(13.8) | 397,814 | 1.0 |
| Sulawesi Selatan | 424 | 405 (95.5) | 795 | 2.0(1-8) | 9.0 | 81(12.9) | 8,851,240 | 0.9 |

**Table 6: Distribution of special sensory officers at PHC level in Rumah Sakit Universitas Hasanuddin**

| District | Number of PHCs | PHC with Special Sensory Officers | No. of special sensory officers | Mean (Range) Special Sensory officers per PHC | Population | Special Sensory officers per 100,000 |
|---|---|---|---|---|---|---|
| Bantaeng | 13 | 13 | 16 | 1.2(1-2) | 187,626 | 8.5 |
| Barru | 12 | 12 | 15 | 1.3(1-3) | 174,323 | 8.6 |
| Bone | 38 | 38 | 43 | 1.1(1-3) | 758,589 | 5.7 |
| Bulukumba | 15 | 15 | 20 | 1.3(1-2) | 420,603 | 4.8 |
| Enrekang | 14 | 14 | 14 | 1 | 206,387 | 6.8 |
| Gowa | 26 | 26 | 35 | 1.3(1-3) | 772,684 | 4.5 |
| Jeneponto | 19 | 19 | 20 | 1.1(1-2) | 363,792 | 5.5 |
| Kepulaun Selayar | 13 | 13 | 14 | 1.1(1-2) | 135,624 | 10.3 |
| Luwu | 16 | 15 | 18 | 1.2(1-3) | 362,027 | 5.0 |
| Luwu Timur | 17 | 17 | 18 | 1.1(1.2) | 299,673 | 6.0 |
| Luwu Utara | 9 | 8 | 8 | 1 | 312,883 | 2.6 |
| Makassar | 46 | 46 | 57 | 1.2(1-3) | 1,526,667 | 3.7 |
| Maros | 11 | 11 | 11 | 1 | 353,121 | 3.1 |
| Palopo | 13 | 13 | 16 | 1.2(1-2) | 184,614 | 8.7 |
| Pangkajene dan Kepu | 20 | 18 | 19 | 1.1(1-2) | 335,514 | 5.7 |
| ParePare | 6 | 6 | 6 | 1 | 145,178 | 4.1 |
| Pinrang | 16 | 16 | 28 | 1.8(1-3) | 377,119 | 7.4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Sidenreng Rappang | 14 | 14 | 16 | 1.1(1-2) | 301,972 | 5.3 |
| Sinjai | 16 | 16 | 17 | 1.1(1-2) | 244,125 | 7.0 |
| Soppeng | 17 | 17 | 17 | 1 | 226,991 | 7.5 |
| Takalar | 14 | 14 | 15 | 1.1(1-2) | 298,688 | 5.0 |
| Tana Toraja | 16 | 15 | 15 | 1 | 234,002 | 6.4 |
| Toraja Utara | 20 | 19 | 19 | 1 | 231,214 | 8.2 |
| Wajo | 23 | 23 | 25 | 1.1(1-2) | 397,814 | 6.3 |
| Sulawesi Selatan | 424 | 418 (98.6) | 482 | 1.2(1-3) | 8,851,240 | 5.4 |

**Table 7: Distribution of nurses at PHCs in Sulawesi Selatan**

| District (no. of PHC) | PHC with nurses | Nurses attended ophthalmology training | Mean (Range) Nurse/Dt | Population | Nurses | Nurses /100,000 | Eye trained nurses Per/100,000 |
|---|---|---|---|---|---|---|---|
| Bantaeng (13) | 13 | 15(8.1) | 14.2(6-26) | 187,626 | 185 | 98.6 | 8.0 |
| Barru (12) | 12 | 4(1.3) | 24.9(8-38) | 174,323 | 299 | 171.5 | 2.3 |
| Bone(38) | 38 | 37(4.8) | 20.4(8-80) | 758,589 | 774 | 102.0 | 4.9 |
| Bulukumba (15) | 15 | 12(2.6) | 31.1(14-52) | 420,603 | 466 | 110.8 | 2.9 |
| Enrekang (14) | 14 | 4(1.3) | 22.1(8-31) | 206,387 | 309 | 149.7 | 1.9 |
| Gowa (26) | 26 | 34(5.2) | 25.3(1-64) | 772,684 | 659 | 85.3 | 4.4 |
| Jeneponto (19) | 19 | 5(1.1) | 24.4(13-55) | 363,792 | 464 | 127.5 | 1.4 |
| Kepulaun Selayar (13) | 13 | 0 | 25(7-69) | 135,624 | 325 | 239.6 | 0.0 |
| Luwu (16) | 15(93.7) | 0 | 26.3(11- 48) | 362,027 | 421 | 116.3 | 0.0 |
| Luwu Timur (17) | 17 | 12(2.3) | 30.5(12-46) | 299,673 | 519 | 173.2 | 4.0 |
| Luwu Utara (9) | 8 (88.9) | 2(1.3) | 16.9(3-49) | 312,883 | 152 | 48.6 | 0.6 |
| Makassar (46) | 46 | 63(12.6) | 10.9(3-33) | 1,526,667 | 501 | 32.8 | 4.1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Maros (11) | 11 | 11(3.9) | 25.5(3-51) | 353,121 | 281 | 79.6 | 3.1 |
| Palopo (13) | 13 | 6(1.6) | 29.5(18-49) | 184,614 | 384 | 208.0 | 3.3 |
| Pangkajene dan Kepu.. (20) | 18 (90) | 26(4.7) | 27.9(6-68) | 335,514 | 557 | 166.0 | 7.7 |
| ParePare (6) | 6 | 7(3.6) | 32.8(27-42) | 145,178 | 197 | 135.7 | 4.8 |
| Pinrang (16) | 16 | 29 (7.8) | 23.2(10-52) | 377,119 | 371 | 98.4 | 7.7 |
| Sidenreng Rappang (14) | 14 | 16(38.1) | 30(9-82) | 301,972 | 42 | 13.9 | 5.3 |
| Sinjai (16) | 16 | 14(3.3) | 26.2(1-55) | 244,125 | 419 | 171.6 | 5.7 |
| Soppeng (17) | 17 | 24(9.3) | 15.1(1-34) | 226,991 | 257 | 113.2 | 10.6 |
| Takalar (14) | 14 | 13(4.1) | 22.6(7-47) | 298,688 | 316 | 105.8 | 4.4 |
| Tana Toraja (16) | 15 (93.7) | 3(2.0) | 9.5(3-14) | 234,002 | 152 | 65.0 | 1.3 |
| Toraja Utara (20) | 19 (95.0) | 4(1.7) | 12(4-29) | 231,214 | 239 | 103.4 | 1.7 |
| Wajo (23) | 23 | 27 (6.3) | 18.6(5-46) | 397,814 | 428 | 107.6 | 6.8 |
| Sulawesi Selatan (424) | 418 (98.6) | 368(4.2) | 21.5(1-82) | 8,851,240 | 8717 | 98.5 | 4.2 |

## Takeaways at Primary Level

Sulawesi Selatan has a well- resourced primary care health system. With a high proportion of the PHCs having functional basic eye equipment and a significant proportion of the PHCs having adequate human resources (Medical officers-95.5%; Special Sensory Officers-98.6%; Nurses-98.6%), only a small proportion were oriented to paediatric eye care(12.9% medical officers & 4.2% nurses). Therefore, with appropriate training and skilling there is a tremendous potential for scaling up detection and timely referral for paediatric eye problems. Additional skills need to be provided to the nurses for vision acuity measurement and basic refraction so that a proper referral linkage can be ensured.

## SECTION B: GENERAL AND EYE HOSPITALS

A total of 58 hospitals provided information related to the infrastructure available at the hospitals, human resources, equipment inventory and patient workload (Table 8). There was a small proportion of standalone or teaching eye hospitals among the respondent facilities. Most facilities were secondary care facilities (93.1%).

**Table 8: Characteristics of hospitals providing eye care services in Sulawesi Selatan**

| **Parameter** | **Frequency** | **Proportion** |
|---|---|---|
| Responding Hospitals | 58 | |
| **Ownership** | | |
| Government owned | 32 | 55.2 |
| Privately owned | 26 | 44.8 |
| **Administrative Status** | | |
| Standalone eye hospital | 7 | 12.1 |
| Eye department part of a multispecialty hospital | 51 | 87.9 |
| **Teaching Status** | | |
| Teaching Hospital | 8 | 13.8 |
| Only Service Hospital | 50 | 86.2 |
| **Accreditation Status** | | |
| Accredited Hospitals | 44 | 75.9 |
| Hospital Not accredited | 14 | 24.1 |
| **Type of Hospital** | | |
| Type A | 1 | 1.7 |
| Type B | 14 | 24.1 |
| Type C | 26 | 44.8 |
| Type D | 17 | 29.3 |
| **Level of Service Delivery** | | |
| Secondary | 54 | 93.1 |
| Tertiary | 4 | 6.9 |

Eight six percent of the responding hospitals reported that they had in-patient facilities (Table 9). Multispecialty hospitals, public-funded hospitals, teaching hospitals and accredited hospitals reported bed

availability in a higher proportion compared to others. Of all beds, overall, 6.9% were dedicated for eye admissions.

**Table 9: Infrastructure in responding hospitals**

| **Parameter (N)** | **Beds Available N (%)** | **Eye Beds Available N (%)** | **24x7 emergency available N(%)** | **OR available for eye N (%)** | **Optical Unit available N (%)** | **Contact Lens Unit Available N (%)** |
|---|---|---|---|---|---|---|
| Responding Hospitals (58) | 50 (86.2) | 4 (6.9) | 13 (22.4) | 52 (89.7) | 6 (10.3) | 0 |
| **Ownership** | | | | | | |
| Government owned (32) | 32 (100) | 2 (6.2) | 5 (15.6) | 29 (90.6) | 1 (3.1) | 0 |
| Privately owned(26) | 18 (69.2) | 2 (7.7) | 8 (30.8) | 23 (88.5) | 5 (19.2) | 0 |
| **Statistical Difference** | | $X^2$-0.4; p=0.8 | $X^2$-2.1; p=0.1 | **$X^2$-9.2; p=0.002** | **$X^2$-4.01; p=0.04** | |
| **Administrative Status** | | | | | | |
| Standalone eye hospital (7) | 1 (14.3) | 1 (14.3) | 3 (42.9) | 7 (100) | 5 (71.4) | 0 |
| Eye department part of a multispecialty hospital (51) | 49 (96.1) | 3 (5.9) | 10 (19.6) | 45 (88.2) | 1 (2.0) | 0 |
| **Statistical Difference** | | $X^2$-0.7; p=0.5 | $X^2$-2.1; p=0.8 | **$X^2$-9.2; p=0.002** | **$X^2$-32.0; p=<0.001** | |
| **Teaching Status** | | | | | | |
| Teaching Hospital (8) | 8 (100) | 1 (12.5) | 0 | 7 (87.5) | 0 | 0 |
| Only Service Hospital (50) | 42 (84) | 3 (6.0) | 13 (26.0) | 45 (90.0) | 6 (12.0) | 0 |
| **Statistical Difference** | | $X^2$-0.4; p=0.5 | $X^2$-0.4; p=0.8 | **$X^2$-9.2; p=0.002** | $X^2$-1.07; p=0.3 | |
| **Accreditation Status** | | | | | | |
| Accredited Hospitals (44) | 44 (100) | 3 (6.8) | 6 (13.6) | 41 (93.2) | 1 (2.3) | 0 |
| Hospital Not accredited (14) | 6 (42.9) | 1 (7.1) | 7 (50.0) | 11 (78.6) | 5 (35.7) | 0 |
| **Statistical Difference** | | $X^2$-0.002; p=0.97 | **$X^2$-9.2; p=0.002** | **$X^2$-9.2; p=0.002** | **$X^2$-12.8; p=<0.001** | |
| **Type of Hospital** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Type A (1) | 1 (100) | 1 (100) | 0 | 0 | 0 | 0 |
| Type B (14) | 14 (100) | 2 (14.3) | 0 | 14 (100) | 0 | 0 |
| Type C (26) | 26 (100) | 1 (3.8) | 4 (15.4) | 24 (92.3) | 1 (3.8) | 0 |
| Type D (17) | 9 (52.9) | 4 (23.5) | 9 (52.9) | 14 (82.3) | 5 (29.4) | 0 |
| **Statistical Difference** | | $X^2$-0.13; p=0.9 | **$X^2$-15.4; p=0.001** | **$X^2$-9.2; p=0.002** | **$X^2$-9.6; p=0.02** | |
| **Level of Service Delivery** | | | | | | |
| Secondary (54) | 46 (85.2) | 4 (7.4) | 12 (22.2) | 48 (88.9) | 6 (11.1) | 0 |
| Tertiary (4) | 4 (110) | 0 | 1 (25.0) | 4 (100.0) | 0 | 0 |
| **Statistical Difference** | | $X^2$-0.32; p=0.6 | $X^2$-0.01; p=0.9 | **$X^2$-9.2; p=0.002** | $X^2$-0.5; p=0.5 | |

Nearly a quarter (22.4%) of the hospitals reported a 24x7 emergency service. 89.7% reported availability of operating room for eye surgeries. An optical unit was available in only 10% of hospitals and this was significantly more in private hospitals and standalone eye hospitals, type C hospitals and tertiary level facilities. With some of these parameters non-accredited hospitals reported significantly better facilities than the accredited hospitals. None of the 58 facilities reported the availability of a contact lens unit. The distribution of facilities across the districts was very variable. Only 3 districts had an optical unit, 8 districts had a 24x7 eye emergency facility and 5 districts had an eye operation room available (Table 10). Therefore, the facilities were not uniformly distributed across the province with clustering of facilities in some locations and a lack of infrastructure in other districts.

Majority of the responding hospitals (86.2%) reported in-patient facilities (Table 11). Public funded hospitals, multispecialty hospitals, teaching hospitals, accredited hospitals, Type A,B,C hospitals and tertiary level facilities reported universal or near universal bed availability for admitted patients. A total of 8422 beds for an estimated population of Sulawesi Selatan (2019) of 8,851,240 translates to 95.1 beds per 100,000 population.

The availability of dedicated beds for ophthalmology was 0.6% of all beds reported by the hospitals (Table 12). Only 5.2% hospitals reported dedicated beds for ophthalmology. Even among standalone eye hospitals, only 14.3% reported availability of inpatient facilities.

Since Retinopathy of Prematurity (ROP) is of concern in Indonesia, information was also collected on availability of neonatal care facilities in Sulawesi Selatan. Among the 58 hospitals, only 17 (29.3%) reported the availability of a Neonatal Intensive Care Unit (NICU). As anticipated, none

of the standalone eye hospitals had an NICU (Table 13). None of the differences were statistically significant.

Most hospitals reported using a combination of paper and electronic medical record (EMR) systems for patient data capture. Electronic medical record (EMR) was used in 25.9% of the out-patient clinics and 22.1% in the operating rooms (Table 14). Only 24.1% hospitals reported sharing records with patients. More than half the responding hospitals reported that they had a patient tracking system available. The only patient tracking system in use as reported was telephonic follow-up.

**Table 10: District level eye care infrastructure**

| District | Availability of Optical dispensing units | 24x7 eye emergency facility | Operating Rooms available for eye surgery | Eye OR available daily | Eye OR available 2-3 times a week | Eye OR weekly or based on clinical load |
|---|---|---|---|---|---|---|
| Bantaeng (3) | 0 | 2 (66.7) | 3 (100.0) | 1 (33.3) | 1 (33.3) | 1 (33.3) |
| Barru (1) | 0 | 0 | 1 (100.0) | 0 | 1 (100) | 0 |
| Bone (2) | 0 | 0 | 2 (100.0) | 0 | 1 (50) | 0 |
| Enrekang (1) | 0 | 0 | 1 (100.0) | 1 (100.0) | 0 | 0 |
| Gowa (2) | 0 | 0 | 2 (100.0) | 1 (50.0) | 0 | 1 (50.0) |
| Jeneponto (1) | 1 (100.0) | 1 (100.0) | 1 | 0 | 1 (100.0) | 0 |
| Kepulaun Selayar (1) | 0 | 0 | 1 (100.0) | 0 | 0 | 1 (100) |
| KAB LUWU (1) | 0 | 0 | 1 (100.0) | 0 | 1 (100.0) | |
| Luwu (1) | 0 | 0 | 1 | 0 | 1 (100) | 0 |
| Luwu Timur (1) | 0 | 0 | 1 (100.0) | 0 | 0 | 1(100) |
| Luwu Utara(1) | 0 | 1 (100.0) | 1 (100.0) | 0 | 1 (100) | 0 |
| Makassar (25) | 4 (16.0) | 4 (16.0) | 22 (88.0) | 9 (36.0) | 8 (32.0) | 3 (12.0) |
| Maros (2) | 0 | 0 | 2 (100.0) | 1 (25.0) | 1 (25.0) | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Pangkajene dan Kepu (1) | 0 | 0 | 1(100.0) | 0 | 1 (100.0) | 0 |
| ParePare (2) | 0 | 1 (50.0) | 2 (100.0) | 0 | 1 (50) | 1 (50) |
| Pinrang (2) | 0 | 0 | 2 (100.0) | 0 | 1 (50) | 1 (50) |
| Sidenreng Rappang (2) | 0 | 0 | 1 (50.0) | 0 | 1 (100) | 0 |
| Sinjai (1) | 0 | | 1 (100.0) | 0 | 0 | 1 (100) |
| Soppeng (1) | 0 | 1 (100.0) | 1 (100.0) | 0 | 1(100) | 0 |
| Takalar (1) | 0 | 1 (100.0) | 1 (100.0) | 0 | 0 | 1 (100) |
| Toraja Utara (3) | 0 | 2 (66.7) | 1 (33.3) | 0 | 0 | 2 (100) |
| Wajo (3) | 1 (33.3) | 0 | 3 (100.0) | 0 | 0 | 3 (100) |
| Sulawesi Selatan (58) | 6 (10.3) | 13 (22.4) | 48 (82.8) | 13 (22.4) | 20 (34.5) | 16 (27.6) |

**Table 11: In-patient strength of hospitals in Sulawesi Selatan**

| Parameter | Hospitals with inpatient beds N(%) | Total No. of beds available | Mean available beds (±SD) | Median of available beds | Reported Range |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 50 (86.2) | 8422 | 168.4(±105.5) | 176.5 | 3-506 |
| **Ownership** | | | | | |
| Government owned (32) | 32 (100.0) | 6542 | 204.4(±96.8) | 196.5 | 50-506 |
| Privately owned(26) | 18 (69.2) | 1880 | 104.4(±90.7) | 55.5 | 3-245 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 1 (14.3) | 16 | 16 | 16 | 16 |
| Eye department part of a multispecialty hospital (51) | 49 (96.1) | 8406 | 171.6(±104.3) | 181 | 3-506 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 8 (100.0) | 1883 | 235.4(±149.9) | 200.5 | 56-506 |
| Only Service Hospital (50) | 42 (84.0) | 6539 | 155.7(±91.8) | 166 | 3-360 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 44 (100) | 8300 | 188.6(±95.7) | 196.5 | 39-506 |
| Hospital Not accredited (14) | 6 (42.9) | 122 | 20.3(±16) | 13 | 3-360 |
| **Type of Hospital** | | | | | |
| Type A (1) | 1 (100) | 506 | 506 | 506 | 506-506 |
| Type B (14) | 14 (100) | 3268 | 233.4(±68.0) | 210 | 150-405 |
| Type C (26) | 26 (100) | 4363 | 167.8(±74.6) | 163.5 | 50-360 |
| Type D (17) | 9 (52.9) | 285 | 31.7(±24.7) | 27 | 3-76 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 46 (85.2) | 7490 | 162.8(±107.8) | 157.5 | 3-506 |
| Tertiary (4) | 4 (100) | 932 | 233(±40.8) | 236 | 181-279 |

**Table 12: Availability of inpatient facilities in Sulawesi Selatan**

| Parameter | Hospitals with dedicated eye beds N (%) | Total No. of eye beds available | % eye beds of all beds in hospital | Mean eye beds available (±SD) | Median eye beds available | Reported eye bed Range |
|---|---|---|---|---|---|---|
| Responding Hospitals (58) | 3 (5.2%) | 53 | 0.6% | 17.7 (±8.6) | 16 | 10-27 |
| **Ownership** | | | | | | |
| Government owned (32) | 2 (6.3%) | 37 | 0.6% | 18.5(±12.0) | 18.5 | 10-27 |
| Privately owned(26) | 1 (3.8%) | 16 | 0.9% | 16 | 16 | 16-16 |
| **Administrative Status** | | | | | | |
| Standalone eye hospital (7) | 1 (14.3%) | 16 | 100% | 16 | 16 | 16-16 |
| Eye department part of a multispecialty hospital (51) | 2 (3.9%) | 37 | 0.4% | 18.5 | 12.0 | 10-27 |
| **Teaching Status** | | | | | | |
| Teaching Hospital (8) | 1 (12.5%) | 10 | 0.5% | 10 | 10 | 10-10 |
| Only Service Hospital (50) | 2 (4.0%) | 43 | 0.7% | 21.5(±7.8) | 21.5 | 16-27 |
| **Accreditation Status** | | | | | | |
| Accredited Hospitals (44) | 2 (4.5%) | 37 | 0.4% | 18.5(±12.0) | 18.5 | 10-27 |
| Hospital Not accredited (14) | 1 (7.1%) | 16 | 13.1% | 16 | 16 | 16-16 |
| **Type of Hospital** | | | | | | |
| Type A (1) | 0 | 0 | 0 | | | |
| Type B (14) | 1 (7.1%) | 10 | 0.3% | 10 | 10 | 10-10 |
| Type C (26) | 1 (3.8%) | 27 | 0.6% | 27 | 27 | 27-27 |
| Type D (17) | 1(5.9%) | 16 | 5.6% | 16 | 16 | 16-16 |
| **Level of Service Delivery** | | | | | | |
| Secondary (54) | 3 (5.6%) | 53 | 0.7% | 17.7(±8.6) | 16 | 10-27 |
| Tertiary (4) | NA | NA | NA | NA | NA | NA |

**Table 13: Availability of neonatal care facilities and human resources**

| Parameter (N) | NICU Available N (%) | Neonatologist Available in hospitals reporting NICU N (%) | Trained NICU nurse available in hospitals reporting an NICU N(%) |
|---|---|---|---|
| Responding Hospitals (58) | 17 (29.3) | 11 (64.7) | 14 (82.3) |
| **Ownership** | | | |
| Government owned (32) | 12 (37.5) | 7 (58.3) | 9 (75.0) |
| Privately owned(26) | 5 (19.2) | 4 (80.0) | 5 (100.0) |
| **Administrative Status** | | | |
| Standalone eye hospital (7) | 0 | 0 | 0 |
| Eye department part of a multispecialty hospital (51) | 17 (33.3) | 11 (64.7) | 14 (82.3) |
| **Teaching Status** | | | |
| Teaching Hospital (8) | 4 (50.0) | 4 (100.0) | 4 (100.0) |
| Only Service Hospital (50) | 28 (56.0) | 28 (100.0) | 28 (100.0) |
| **Accreditation Status** | | | |
| Accredited Hospitals (44) | 17 (38.6) | 11 (64.7) | 14 (82.3) |
| Hospital Not accredited (14) | 0 | 0 | 0 |
| **Type of Hospital** | | | |
| Type A (1) | 0 | 0 | 0 |
| Type B (14) | 8 (57.1) | 6 (75.0) | 7 (87.5) |
| Type C (26) | 9 (34.6) | 5 (55.6) | 7 (77.8) |
| Type D (17) | 0 | 0 | 0 |
| **Level of Service Delivery** | | | |
| Secondary (54) | 14 (25.9) | 10 (71.4) | 12 (85.7) |
| Tertiary (4) | 3 (75.0) | 1 (33.3) | 2 (66.7) |

Statistically significant differences were observed in use of EMR at out-patient clinic level between secondary and tertiary care facilities. Similar statistically significant differences were observed between Type of Hospitals in relation to the use of EMR in the operating rooms. Standalone eye hospitals had a statistically significant difference in comparison to eye departments in a multispecialty hospital with regard to availability of patient tracking systems. Similar differences were also observed between the accredited and non-accredited hospitals.

**Table 14: Data capture and tracking systems reported**

| **Parameter (N)** | **EMR Available in OP Clinics N (%)** | **EMR Available in OR N (%)** | **Records shared with patients N(%)** | **Patient tracking system available N (%)** | **Telephonic tracking done N (%)** |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 15 (25.9) | 13 (22.4) | 14 (24.1) | 32 (55.2) | 32 (55.2) |
| **Ownership** | | | | | |
| Government owned (32) | 9 (28.1) | 10 (31.2) | 6 (18.8) | 15 (46.9) | 16 (50.0) |
| Privately owned(26) | 6 (23.1) | 3 (11.5) | 8 (30.8) | 17 (65.4) | 16 (61.5) |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 1 (14.3) | 0 | 3 (42.9) | 7 (100) | 7 (100) |
| Eye department part of a multispecialty hospital (51) | 14 (27.4) | 13 (25.5) | 11 (21.6) | 25 (49.0) | 25 (49.0) |
| **Statistical Difference** | **NS** | **NS** | NS | **$X^2$-6.5; p=0.01** | **NS** |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 3 (37.5) | 7 (87.5) | 1 (12.5) | 4 (50.0) | 4 (50.0) |
| Only Service Hospital (50) | 12 (24.0) | 9 (18.0) | 13 (26.0) | 28 (56.0) | 28 (56.0) |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 11 (25.0) | 12 (27.3) | 6 (13.6) | 20 (45.4) | 21 (47.7) |

| | | | | | |
|---|---|---|---|---|---|
| Hospital Not accredited (14) | 4 (28.6) | 1 (7.1) | 6 (42.9) | 12 (85.7) | 11 (78.6) |
| **Statistical Difference** | **NS** | **NS** | **NS** | **$X^2$-6.96; p=0.01** | **NS** |
| **Type of Hospital** | | | | | |
| Type A (1) | 0 | 1 (100) | 0 | 1 (100) | 1 (100) |
| Type B (14) | 5 (35.7) | 5 (35.7) | 3 (21.4) | 7 (50.0) | 7 (50.0) |
| Type C (26) | 6 (23.1) | 6 (23.1) | 5 (19.2) | 12 (46.1) | 13 (50.0) |
| Type D (17) | 0 | 1 (5.9) | 6 (35.3) | 12 (70.6) | 11 (64.7) |
| **Statistical Difference** | **NS** | **$X^2$-23.7; p=0.001** | **NS** | **NS** | **NS** |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 13 (24.1) | 11 (20.4) | 14 (25.9) | 29 (53.7) | 29 (53.7) |
| Tertiary (4) | 2 (50.0) | 2(50.0) | 0 | 3 (75.0) | 3 (75.0) |
| **Statistical Difference** | **$X^2$-12.7; p=0002** | **NS** | **NS** | **NS** | **NS** |

## Equipment Status

Information was also collected on the availability of different pieces of equipment and the level of functionality of the same (Table 15). In the analysis, only the availability of functional equipment has been considered. Availability of functional equipment for basic eye examination was mostly good. The same was the case with the basic refraction equipment and colour-vision tests. More than a third had paediatric vision testing charts available and nearly a third had functional indirect ophthalmoscopes. These hospitals have the potential to be scaled up to paediatric eye care if provided requisite equipment and skills.

Functional equipment was also grouped into basic (vision testing, refraction and basic diagnostic equipment, glaucoma diagnostics and essential anaesthesia equipment) (Tables 16-18). With regard to basic diagnostic equipment there were no hospital which had a full complement of functional equipment. A majority had ≥ 50% of the functional equipment (Table 16). Standalone eye hospitals were significantly better compared to multispecialty hospitals. 75% of the hospitals reported having a full complement of equipment for glaucoma diagnostics with statistically significant

differences being observed with regard to accredited hospitals and type of hospitals (Table 17). With regard to critical anaesthesia equipment, the only statistically significant difference was observed between standalone and multispecialty hospitals (Table 18).

**Table 15: Functional equipment availability**

| **Functional Equipment** | **No. reporting functional equipment (N=58)** | **%** |
|---|---|---|
| **Basic eye examination** | | |
| Penlight torch | 58 | 100.00 |
| Slit lamp | 52 | 89.66 |
| Loupe | 47 | 81.03 |
| Direct Ophthalmoscope | 41 | 70.69 |
| Schiotz tonometer | 41 | 70.69 |
| **Refraction related** | | |
| Ruler | 58 | 100.00 |
| Trial lens set | 55 | 94.83 |
| Autorefractometer | 38 | 65.52 |
| 14 plate Ishihara Test | 49 | 84.48 |
| Pediatric vision charts | 21 | 36.21 |
| Retinoscope | 14 | 24.14 |
| Occluder | 13 | 22.41 |
| Lensometer | 13 | 22.41 |
| Child Trial Frame | 11 | 18.97 |
| Near fixation target | 3 | 5.17 |
| **Glaucoma & Other Advanced Diagnostics** | | |
| Non-Contact Tonometer | 23 | 39.66 |

| | | |
|---|---|---|
| Indirect Ophthalmoscope | 19 | 32.76 |
| 78D lens | 11 | 18.97 |
| Gonioscope | 8 | 13.79 |
| 28D Lens | 7 | 12.07 |
| 90D lens | 5 | 8.62 |
| Goldman/Automated Perimeter | 3 | 5.17 |
| Fundus camera | 3 | 5.17 |
| OCT | 2 | 3.45 |
| Argon/Diode laser | 2 | 3.45 |
| **Other Ophthalmic** | | |
| Verban scissors | 52 | 89.66 |
| Tools Forceps | 51 | 87.93 |
| Eyelid speculum/ retractor | 48 | 82.76 |
| Biometry / A-scan | 28 | 48.28 |
| Punctum dilator & Anel lacrimal test canula | 16 | 27.59 |
| B-scan/ Ultrasonography | 8 | 13.79 |
| Kimura spatula | 8 | 13.79 |
| Prism Bar/loose prism | 2 | 3.45 |
| Placido test (Keratoscope) | 1 | 1.72 |
| Indirect laser ophthalmoscope | 1 | 1.72 |
| **Anesthesia equipment** | | |
| Ambu Bag | 47 | 81.03 |
| Availability of Boyle's apparatus | 45 | 77.59 |
| **Others** | | |

| | | |
|---|---|---|
| Binocular Microscope | 49 | 84.48 |
| Sterilizer | 48 | 82.76 |
| Availability of X-Ray facilities | 44 | 75.86 |
| Routine availability fluorescein paper and dilating drops | 33 | 56.90 |
| Availability of CT facilities | 17 | 29.31 |
| Availability of MRI facilities | 2 | 3.45 |

**Table 16: Basic diagnostic equipment availability**

| **Parameter** | **All functional equipment available N (%)** | **≥ 50% functional equipment available but not all N (%)** | **< 50% functional equipment available N (%)** | **Comments** |
|---|---|---|---|---|
| Responding Hospitals (58) | 0 | 37 (63.8) | 21 (36.2) | |
| **Ownership** | | | | |
| Government owned (32) | 0 | 18(56.2) | 14(43.8) | $X^2$-1.758 P=0.185 |
| Privately owned(26) | 0 | 19(73.1) | 7(26.9) | |
| **Administrative Status** | | | | |
| Standalone eye hospital (7) | 0 | 7(100.0) | | $X^2$-4.518 **P=0.034** |
| Eye department part of a multispecialty hospital (51) | 0 | 30(58.8) | 21(41.2) | |
| **Teaching Status** | | | | |
| Teaching Hospital (8) | 0 | 6(75.0) | 2(25.0) | $X^2$-0.504 P=0.477 |
| Only Service Hospital (50) | 0 | 31(62.0) | 19(38.0) | |
| **Accreditation Status** | | | | |
| Accredited Hospitals (44) | 0 | 27(73.0) | 17(80.9) | $X^2$-0.465 P=0.495 |
| Hospital Not accredited (14) | 0 | 10(71.40) | 4(28.6) | |

| | | | | |
|---|---|---|---|---|
| **Type of Hospital** | | | | |
| Type A (1) | 0 | | 1(100.0) | $X^2$-5.275<br>P=0.153 |
| Type B (14) | 0 | 12(85.7) | 2(14.3) | |
| Type C (26) | 0 | 15(57.7) | 11(42.3) | |
| Type D (17) | 0 | 10(58.8) | 7(41.2) | |
| **Level of Service Delivery** | | | | |
| Secondary (54) | 0 | 34(63.0) | 20(37.0) | $X^2$-0.233<br>P=0.629 |
| Tertiary (4) | 0 | 3(75.0) | 1(25.0) | |

**Table 17: Glaucoma Diagnostic Equipment Availability reported**

| **Parameter** | **All functional equipment available N (%)** | **≥ 50% functional equipment available but not all N (%)** | **< 50% functional equipment available N(%)** | **Remarks** |
|---|---|---|---|---|
| Responding Hospitals (58) | 44 (75.9) | 3 (5.2) | 11 (19.0) | |
| **Ownership** | | | | |
| Government owned (32) | 30(93.7) | 1(3.1) | 1 (3.1) | $X^2$-1.519 P=0.218 |
| Privately owned(26) | 14(53.8) | 2(7.7) | 10 (38.5) | |
| **Administrative Status** | | | | |
| Standalone eye hospital (7) | 0 | 0 | 7 (100) | |
| Eye department part of a multispecialty hospital (51) | 44 (86.3) | 3 (5.9) | 4 (7.8) | |
| **Teaching Status** | | | | |
| Teaching Hospital (8) | 7(87.5) | 0 | 1 (12.5) | $X^2$-0.560 P=0.454 |
| Only Service Hospital (50) | 37(74) | 3(6.0) | 10 (20.0) | |
| **Accreditation Status** | | | | |
| Accredited Hospitals (44) | 42(95.5) | 1(2.3) | 1(2.3) | $X^2$-13.919 P < 0.001 |
| Hospital Not accredited (14) | 2(14.3) | 2(14.3) | 10 (71.4) | |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | 0 | 1 (100) | |
| Type B (14) | 14(100) | 0 | 0 | |
| Type C (26) | 25(96.2) | 1(3.8) | 0 | $X^2$-7.001 P=0.03 |
| Type D (17) | 5(29.4) | 2(11.8) | 10 (58.8) | |
| **Level of Service Delivery** | | | | |
| Secondary (54) | 40(74.1) | 3(5.6) | 11(20.4) | $X^2$-0.298 P=0.585 |
| Tertiary (4) | 4(100.0) | | 0 | |

**Table 18: Availability of Critical Anaesthesia equipment**

| Parameter | All functional equipment available N (%) | ≥ 50% functional equipment available but not all N (%) | < 50% functional equipment available N(%) | Remarks |
|---|---|---|---|---|
| Responding Hospitals (58) | 8 (13.8) | 16 (27.6) | 34(58.6) | |
| **Ownership** | | | | |
| Government owned (32) | 3 (9.7) | 9(28.1) | 20(62.5) | $X^2$-1.373 P=0.503 |
| Privately owned(26) | 5(19.2) | 7(26.9) | 14(53.8) | |
| **Administrative Status** | | | | |
| Standalone eye hospital (7) | 1(14.3) | 4(57.1) | 2(28.6) | **$X^2$-9.769 P=0.008** |
| Eye department part of a multispecialty hospital (51) | 7 (13.7) | 12(23.5) | 32(62.7) | |
| **Teaching Status** | | | | |
| Teaching Hospital (8) | 1 (12.5) | 3(37.5) | 4(50.0) | $X^2$-0.610 P=0.737 |
| Only Service Hospital (50) | 7(14.0) | 13(26.0) | 30(60.0) | |
| **Accreditation Status** | | | | |
| Accredited Hospitals (44) | 4 (9.1) | 12(27.3) | 28(63.6) | $X^2$-4.056 P=0.132 |
| Hospital Not accredited (14) | 4(28.6) | 4(28.6) | 6(42.8) | |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | 0 | 1 (100.0) | |
| Type B (14) | 1 (7.1) | 7(50.0) | 6(42.9) | |
| Type C (26) | 2 (7.7) | 5(19.2) | 19(73.1) | $X^2$-7.015 P=0.135 |
| Type D (17) | 5(29.4) | 4(23.5) | 8(47.1) | |
| **Level of Service Delivery** | | | | |
| Secondary (54) | 8(14.8) | 15(27.8) | 31(57.4) | $X^2$-0.186 P=0.911 |
| Tertiary (4) | 0 | 1(25.0) | 3(75.0) | |

## Human Resources at Responding Hospitals

The availability of human resources at the different hospitals was also assessed. With respect to the clinical human resources, 91.4% of the responding hospitals (53) reported the availability of a full time GP, while 79.3% reported a full time ophthalmologist being available (Table 19). Optometrists were scarce in most hospitals. Statistically significant differences were observed in relation to GPs between standalone and multispecialty hospitals. Similar differences were observed between ophthalmologists at teaching compared to service hospitals and type of hospitals. A marginal statistical difference was seen in optometrists between secondary and tertiary hospitals. Statistically significant differences were similarly observed in the availability of full time anaesthetists in teaching compared to non-teaching hospitals.

With regard to para ophthalmic and support human resources, a statistical difference was observed between teaching and non-teaching hospitals with regard to the availability of counsellors (Table 20) and the availability of dedicated administrative personnel for ophthalmology between standalone eye hospitals and multispecialty hospitals. Overall the availability of ophthalmic counsellors, computer operators, ophthalmic assistants and dedicated administrators was poor across all sectors.

The mean GPs at responding hospitals was 13.1 ((±8.8) (Table 21). There were wide variations across the different categories of facilities.

The mean number of ophthalmologists at the 46 responding hospitals was 1.6(±0.9) (Table 22). 12 hospitals did not report on the availability of ophthalmologists.

Only 4 hospitals reported the availability of optometrists and ophthalmic assistants (Table 23). A mean of 1.5(±1) was reported by these hospitals. Teaching hospitals and Type A/B hospitals did not seem to have this human resource. Most hospitals reported on the availability of ophthalmic nurses (Table 24). Overall, the 50 responding hospitals had a mean of 2.9 (±1.8) ophthalmic nurses. There were no significant differences across different types of hospitals. 75.9% hospitals reported availability of full time anesthetists with a mean of 1.8(±1) (Table 25). No full term anesthetists were reported by the standalone eye hospitals. Only 5 hospitals responded on the availability of ophthalmic counsellors and at these hospitals there was a mean of 1.4(±0.9) counsellors. Overall there were only 7 counsellors pointing to the paucity of this cadre (Table 26).

**Table 19: Distribution of clinical human resources**

| **Parameter (N)** | **Hospitals with full time GP Available N (%)** | **Hospitals with full time Ophthalmologist Available N (%)** | **Hospital with full time Optometrist available N(%)** | **Hospitals with full time Ophthalmic Nurse available N (%)** | **Hospitals with full time Anesthetist available N (%)** |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 53 (91.4) | 46 (79.3) | 4(6.9) | 50(86.2) | 44(75.9) |
| **Ownership** | | | | | |
| Government owned (32) | 32 (100) | 28 (87.5) | 2(6.3) | 31(96.9) | 31(96.9) |
| Privately owned(26) | 21 (80.8) | 18 (69.2) | 2(7.7) | 19(73.1) | 13(50) |
| **Statistical Difference** | $X^2$-33.8; p=0.051 | $X^2$-5.1; p= 0.162 | $X^2$- 1.3; p=0.248 | $X^2$-9.3; p=0.230 | $X^2$-5.7; p=0.222 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 4 (57.1) | 4 (57.1) | 2(28.6) | 7(100) | |
| Eye department part of a multispecialty hospital (51) | 49 (96.1) | 42 (82.3) | 2(3.9) | 43(84.3) | 44(86.3) |
| **Statistical Difference** | **$X^2$-41.5; p=0.007** | $X^2$-0.657; p=0.883 | $X^2$- 1.3; p=0.248 | $X^2$-13.1; p=0.070 | |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 8 (100) | 8 (100) | | 7(87.5) | 8(100) |
| Only Service Hospital (50) | 45 (90.0) | 38 (76.0) | 4(8) | 43(86) | 36(72) |

| | | | | | |
|---|---|---|---|---|---|
| **Statistical Difference** | $X^2$-23.1; p= 0.397 | **$X^2$-10.7; p=0.013** | | $X^2$-13.1; p=0.070 | **$X^2$-16.9; p=0.002** |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 44 (100.0) | 37 (84.1) | 2(4.5) | 41(93.2) | 42(95.5) |
| Hospital Not accredited (14) | 9 (64.3) | 9 (64.3) | 2(14.3) | 9(64.3) | 2(14.3) |
| **Statistical Difference** | **$X^2$-47.7; p=0.001** | $X^2$-4.3; p=0.231 | $X^2$- 1.3; p=0.248 | $X^2$-13.5; p=0.085 | $X^2$- 0.5; p=0.974 |
| **Type of Hospital** | | | | | |
| Type A (1) | 1 (100.0) | 1 (100.0) | | 1(100) | 1(100) |
| Type B (14) | 14 (100.0) | 4 (28.6) | | 14(100) | 14(100) |
| Type C (26) | 26 (100) | 21 (80.7) | 2(7.7) | 24(92.3) | 25(96.2) |
| Type D (17) | 12 (70.6) | 10 (58.8) | 2(11.8) | 11(64.7) | 4(23.5) |
| **Statistical Difference** | $X^2$-87.9; p=0.37 | **$X^2$-25.2; p=0.003** | $X^2$- 1.3; p=0.248 | $X^2$-15.0; p=0.823 | $X^2$-20.4; p= 0.060 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 49 (90.7) | 42 (77.8) | 3(5.6) | 46(85.2) | 41(75.9) |
| Tertiary (4) | 4 (100) | 4 (100) | 1(25.0) | 4(100) | 3(75) |
| **Statistical Difference** | $X^2$-26.7; p=0.222 | $X^2$-3.6; p= 0.303 | **$X^2$-;4.0 p=0.046** | $X^2$-4.5; p= 0.725 | $X^2$-1.2; p=0.882 |

**Table 20: Availability of para ophthalmic and support human resources**

| **Parameter (N)** | **Hospitals with Ophthalmic Counsellor Available N (%)** | **Hospitals with Dedicated computer operator for eye department Available N (%)** | **Hospitals with Ophthalmic assistant available N(%)** | **Hospitals with dedicated administrator available N (%)** |
|---|---|---|---|---|
| Responding Hospitals (58) | 5(8.6) | 12(20.7) | 3(5.2) | 11(19) |
| **Ownership** | | | | |
| Government owned (32) | 1(3.1) | 6(18.8) | 1(3.1) | 4(12.5) |
| Privately owned(26) | 4(15.4) | 6(23.1) | 2(7.7) | 7(26.9) |
| **Statistical Difference** | $X^2$-0.3 ; p=0.576 | $X^2$-1.1 ; p=0.296 | | $X^2$-1.4; p=0.237 |
| **Administrative Status** | | | | |
| Standalone eye hospital (7) | 1(14.3) | 3(42.9) | | 3(42.9) |
| Eye department part of a multispecialty hospital (51) | 4(7.8) | 9(17.6) | 3(5.9) | 8(15.7) |
| **Statistical Difference** | $X^2$-0.3 ; p=0.576 | $X^2$- 0.4; p=0.546 | | **$X^2$-6.5; p=0.011** |
| **Teaching Status** | | | | |
| Teaching Hospital (8) | 1(12.5) | | | 1(12.5) |
| Only Service Hospital (50) | 4(8.) | 12(24) | 3(6) | 10(20) |
| **Statistical Difference** | **$X^2$ -5.0 p=0.025** | | | $X^2$- 0.24; p=0.621 |
| **Accreditation Status** | | | | |
| Accredited Hospitals (44) | 2(4.5) | 6(13.6) | 1(2.3) | 5(11.4) |
| Hospital Not accredited (14) | 3(21.4) | 6(42.9 | 2(14.3) | 6(42.9) |
| **Statistical Difference** | $X^2$-1.9; p=0.171 | $X^2$-1.1 ; p=0.296 | | $X^2$-2.0; p= 0.156 |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | 0 | 0 | 0 |
| Type B (14) | 1(7.1) | 1(7.1) | 0 | 1(7.1) |

| | | | | |
|---|---|---|---|---|
| Type C (26) | 1(3.8) | 5(19.2) | 1(3.8) | 4(15.4) |
| Type D (17) | 3(17.6) | 6(35.3) | 2(11.8) | 6(35.3) |
| **Statistical Difference** | $X^2$-5.0; p= 0.82 | $X^2$-1.1 ; p=0.580 | 0 | $X^2$- 2.0; p=0.361 |
| **Level of Service Delivery** | | | | |
| Secondary (54) | 4(7.4) | 12(20.7) | 3(5.6) | 11(20.4) |
| Tertiary (4) | 1(25) | 0 | 0 | 0 |
| **Statistical Difference** | **$X^2$ -5.0 p=0.025** | **NA** | **NA** | **NA** |

**Table 21: Distribution of general practitioners at different categories of hospitals**

| **Parameter** | **Number of Hospitals reporting GP** | **Total No. of general practitioners available** | **Mean general practitioners available (±SD)** | **Median general practitioners available** | **General practitioners Range** |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 53 (91.4) | 693 | 13.1(±8.8) | 13 | 1-41 |
| **Ownership** | | | | | |
| Government owned (32) | 32 | 511 | 16.0(±8.1) | 14 | 6-41 |
| Privately owned(26) | 21 (80.8) | 182 | 8.7(±8.0) | 7 | 1-25 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 4 (57.1) | 4 | 1 | 1 | 1-1 |
| Eye department part of a multispecialty hospital (51) | 49 (96.1) | 689 | 14.1(±8.9) | 13 | 1-41 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 8 | 132 | 16.5(±6.5) | 15 | 9-28 |
| Only Service Hospital (50) | 45 (90.0) | 561 | 12.5(±9.1) | 11 | 1-41 |

| | | | | | |
|---|---|---|---|---|---|
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 44 | 672 | 15.3(±7.9) | 13 | 5-41 |
| Hospital Not accredited (14) | 9(64.3) | 21 | 2.3(±2.6) | 1 | 1-9 |
| **Type of Hospital** | | | | | |
| Type A (1) | 1 | 12 | 12 | 12 | |
| Type B (14) | 14 | 266 | 19.0(±5.5) | 20.5 | 11-28 |
| Type C (26) | 26 | 378 | 14.5(±8.5) | 12.5 | 5-41 |
| Type D (17) | 12 (70.6) | 37 | 3.1(±2.5) | 2 | 1-7 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 49 (90.7) | 603 | 12.3(±8.1) | 11 | 1-31 |
| Tertiary (4) | 4 | 90 | 22.5(±12.9) | 18.5 | 12-41 |

**Table 22: Distribution of ophthalmologists at responding hospitals**

| | **Ophthalmologists** | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Number of Hospitals reporting availability** | **No. available** | **Mean available (±SD)** | **Median available** | **Range** |
| Responding Hospitals (58) | 46 (79.3) | 72 | 1.6(±0.9) | 1 | 1-6 |
| **Ownership** | | | | | |
| Government owned (32) | 28 (87.5) | 42 | 1.5(±0.6) | 1 | 1-3 |
| Privately owned(26) | 18 (69.2) | 30 | 1.7(±1.3) | 1 | 1-6 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 4 (57.1) | 5 | 1.3(±0.5) | 1) | 1-2 |
| Eye department part of a multispecialty hospital (51) | 42 (82.3) | 67 | 1.6(±0.9) | 1 | 1-6 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 8 (100) | 19 | 2.4(±1.7) | 2 | 1-6 |
| Only Service Hospital (50) | 38 (76) | 53 | 1.4(±0.5) | 1 | 1-3 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 37 (84.1) | 62 | 1.7(±1.0) | 1 | 1-6 |
| Hospital Not accredited (14) | 9 (64.3) | 10 | 1.1(±0.3) | 1 | 1-2 |
| **Type of Hospital** | | | | | |
| Type A (1) | 1 (100) | 1 | 1 | 1 | 1-1 |
| Type B (14) | 14 (100) | 34 | 2.4(±1.2) | 2 | 1-2 |
| Type C (26) | 21 (80.8) | 26 | 1.2(±0.4) | 1 | 1-2 |
| Type D (17) | 10 (58.8) | 11 | 1.1(±0.3) | 1 | 1-2 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 42 (77.8) | 64 | 1.5(±0.9) | 1 | 1-6 |
| Tertiary (4) | 4 (100) | 8 | 2(±0.8) | 2 | 1.3 |

**Table 23: Distribution of optometrists/ ophthalmic assistants**

| | **Optometrists/ Ophthalmic Assistants** | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Number of Hospitals reporting availability** | **No. available** | **Mean available (±SD)** | **Median available** | **Range** |
| Responding Hospitals (58) | 4(6.8) | 6 | 1.5(±1) | 1 | 1-3 |
| **Ownership** | | | | | |
| Government owned (32) | 2(6.3) | 4 | 2(±1.4) | 2 | 1-3 |
| Privately owned(26) | 2(7.7) | 2 | 1 | 1 | 1-1 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 2(28.6) | 2 | 1 | 1 | 1-1 |
| Eye department part of a multispecialty hospital (51) | 2(3.9) | 4 | 2(±1.4) | 2 | 1-3 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | | 0 | | | |
| Only Service Hospital (50) | 4(8) | 6 | 1.5(±1) | 1 | 1-3 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 2(4.5) | 4 | 2 | - | - |
| Hospital Not accredited (14) | 2(16.7) | 2 | - | - | - |
| **Type of Hospital** | | | | | |
| Type A (1) | | 0 | | | |
| Type B (14) | | 0 | | | |
| Type C (26) | 2(7.7) | 4 | 2(±1.4) | 2 | 1-3 |
| Type D (17) | 2(11.8) | 2 | 1 | 1 | 1-1 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 3(5.6) | 3 | 1 | 1 | 1-1 |
| Tertiary (4) | 1(25) | 3 | 3 | 3 | 3.3 |

**Table 24: Distribution of ophthalmic nurses at the responding hospitals**

| | **Ophthalmic Nurses** | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Number of Hospitals reporting availability N (%)** | **No. available** | **Mean (±SD)** | **Median** | **Range** |
| Responding Hospitals (58) | 50(86.2) | 143 | 2.9(±1.8) | 5 | 1-10 |
| **Ownership** | | | | | |
| Government owned (32) | 31(96.9) | 89 | 2.9(±2.2) | 2 | 1-10 |
| Privately owned(26) | 19(73.1) | 54 | 2.8(±1.2) | 3 | 1-5 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 7(100) | 25 | 3.6(±1.0) | 4 | 2-5 |
| Eye department part of a multispecialty hospital (51) | 43(84.3) | 118 | 2.7(±2.0) | 2 | 1-10 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 7(87.5) | 19 | 2.7(±1.7) | 2 | 1-6 |
| Only Service Hospital (50) | 43(86) | 124 | 2.9(±1.9) | 2 | 1-10 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 41(93.2) | 114 | 2.8(±2.0) | 2 | 1-10 |
| Hospital Not accredited (14) | 9(64.3) | 29 | 3.2(±1.2) | 3 | 1-5 |
| **Type of Hospital** | | | | | |
| Type A (1) | 1(100) | 1 | 1 | 1 | 1-1 |
| Type B (14) | 14(100) | 38 | 2.7(±1.5) | 2 | 1-6 |
| Type C (26) | 24(92.3) | 71 | 3.0(±2.3) | 2 | 1-10 |
| Type D (17) | 11(64.7) | 33 | 3(±1.2) | 3 | 1-5 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 46(85.2) | 131 | 2.8(±1.9) | 2 | 1-10 |
| Tertiary (4) | 4(100) | 12 | 3(±2.1) | 2.5 | 1-6 |

**Table 25: Distribution of anaesthetists at responding hospitals**

| Parameter | Hospitals reporting availability (N-%) | No. available | Mean (±SD) | Median | Range |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 44(75.9) | 80 | 1.8(±1) | 2 | 1-6 |
| **Ownership** | | | | | |
| Government owned (32) | 31(96.9) | 50 | 1.6(±0.7) | 1 | 1-3 |
| Privately owned(26) | 13(50) | 30 | 2.3(±1.4) | 2 | 1-6 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 0 | NA | NA | NA | NA |
| Eye department part of a multispecialty hospital (51) | 44(81.5) | 80 | 1.8(±1.0) | 2 | 1-6 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 8(100) | 21 | 2.6(±0.9) | 3 | 1-4 |
| Only Service Hospital (50) | 36(72) | 59 | 1.6(±1.0) | 1 | 1-6 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 42(95.5) | 77 | 1.8(±1.0) | 2 | 1-6 |
| Hospital Not accredited (14) | 2(14.3) | 3 | 1.5(±0.7) | 1.5 | 1-2 |
| **Type of Hospital** | | | | | |
| Type A (1) | 1(100) | 1 | 1 | 1 | 1-1 |
| Type B (14) | 14(100) | 37 | 2.6(±1.3) | 2.5 | 1-6 |
| Type C (26) | 25(96.2) | 38 | 1.5(±0.6) | 1 | 1-3 |
| Type D (17) | 4(23.5) | 4 | 1 | 1 | 1-1 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 41(75.9) | 74 | 1.8(±1.0) | 2 | 1-6 |
| Tertiary (4) | 3(75) | 6 | 2(±1.0) | 2 | 1-3 |

**Table 26: Distribution of ophthalmic counsellors at the responding hospitals**

| Parameter | Number of Hospitals reporting availability N (%) | No. available | Mean (±SD) | Median | Range |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 5(8.6) | 7 | 1.4(±0.9) | 1 | 1-3 |
| **Ownership** | | | | | |
| Government owned (32) | 1(3.1) | 1 | 1 | 1 | 1-1 |
| Privately owned(26) | 4(15.4) | 6 | 1.5(±1.0) | 1 | 1.3 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 1(14.3) | 1 | 1 | 1 | 1-1 |
| Eye department part of a multispecialty hospital (51) | 4(7.8) | 6 | 1.5(±1.0) | 1 | 1-3 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 1(12.5) | 3 | 3 | 3 | 0-3 |
| Only Service Hospital (50) | 4(8) | 4 | 1(±1.0) | 1 | 0-1 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 2(4.5) | 4 | 2(±1.4) | 2 | 1-3 |
| Hospital Not accredited (14) | 3(21.4) | 3 | 1(±1.0) | 1 | 1-1 |
| **Type of Hospital** | | | | | |
| Type A (1) | NA | NA | NA | NA | NA |
| Type B (14) | 1(7.1) | 3 | 3 | 3 | 3-3 |
| Type C (26) | 1(3.8) | 1 | 1 | 1 | 1-1 |
| Type D (17) | 3(17.6) | 3 | 1 | 1 | 1-1 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 4(7.4) | 4 | 1 | 1 | 1-1 |
| Tertiary (4) | 1 (25.0) | 3 | 3 | 3 | 1-3 |

The availability of neonatologists was better than most other human resources with a mean of 2.1(±1.8) neonatologists per responding hospital. 81% of the hospitals provided information on the availability of neonatologists (Table 27). Interestingly, one standalone eye hospital also reported the presence of a neonatologist. This is a positive development especially in a country where there is concern on the increasing magnitude of ROP.

Dedicated computer operator's/ data managers in the eye department were reported only by 12 hospitals (20.9%). The mean per responding hospital was 1.1(±0.3) (Table 28). For effective HMIS, it is essential to have dedicated computer operator's/ data managers. The lack of such dedicated personnel hinders collection of data that can help in planning eye care services.

Only 11 hospitals (19%) reported availability of dedicated administrative personnel for eye care (Table 29). The mean was 1.2(±0.4) and there were wide variations across different categories of hospitals.

More than 90% of hospitals provided data on outpatient consultations and admissions in one calendar year (2018). The mean outpatient consultations was 3778.1 (±468) while the mean was 1647.2 (±309) for ophthalmology outpatient consultations (Table 30). From the data provided, 43.6% of all outpatient consultations pertained to the eye. This seems to an error as hospitals may not have been able to collate information from all specialties and therefore there seems to be an overestimation in the proportion of eye consultations at the outpatient clinic level. When it comes to patient admissions in the hospitals, eye admissions contribute to only 3.3% of all admissions. This could be because most eye procedures do not need hospital admission.

Public-funded hospitals, accredited hospitals, Type C hospitals and secondary level facilities reported significantly higher workloads in the outpatient clinics (Table 31). A similar trend was also observed in relation to hospital admissions (Table 32).

**Table 27: Distribution of neonatologists at responding hospitals**

| Parameter | Hospitals reporting availability N(%) | No. available | Mean (±SD) | Median | Range |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 47(81.0) | 97 | 2.1(±1.8) | 1 | 1-9 |
| **Ownership** | | | | | |
| Government owned (32) | 31(96.9) | 52 | 1.6(±1) | 1 | 1.4 |
| Privately owned(26) | 16(51.5) | 45 | 2.8(±1.8) | 2 | 1-9 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 1(14.3) | 1 | 1 | 1 | 1-1 |
| Eye department part of a multispecialty hospital (51) | 46(90.2) | 96 | 2.1(±1.8) | 1.5 | 1-9 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 8(100) | 25 | 3.1(±2.8) | 2.5 | 1.9 |
| Only Service Hospital (50) | 39(78) | 72 | 1.8(±1.5) | 1 | 1-9 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 41(93.2) | 90 | 2.9(±1.9) | 2 | 1-9 |
| Hospital Not accredited (14) | 6(42.9) | 7 | 1.2(±0.4) | 1 | 1-2 |
| **Type of Hospital** | | | | | |
| Type A (1) | 1(100) | 1 | 1 | 1 | 1-1 |
| Type B (14) | 14(100) | 54 | 3.9(±2.4) | 4 | 1-9 |
| Type C (26) | 24(92.3) | 32 | 1.3(±0.5) | 1 | 1-2 |
| Type D (17) | 8(47.1) | 10 | 1.3(±0.5) | 1 | 1-2 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 44(81.5) | 90 | 2.0(±1.8) | 1 | 1-9 |
| Tertiary (4) | 3(75) | 7 | 2.3(±1.5) | 2 | 1-4 |

**Table 28: Distribution of dedicated computer operator's/ data managers at hospitals**

| Parameter | Hospitals reporting availability N (%) | No. available | Mean (±SD) | Median | Range |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 12(20.9) | 13 | 1.1(±0.3) | 1 | 1-2 |
| **Ownership** | | | | | |
| Government owned (32) | 6(18.8) | 6 | 1 | 1 | 1-1 |
| Privately owned(26) | 6(23.1) | 7 | 1.2(±0.4) | 1 | 1-2 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 3(42.9) | 3 | 1 | 1 | 1-1 |
| Eye department part of a multispecialty hospital (51) | 6(11.8) | 10 | 1.1(±0.3) | 1 | 1-2 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | | | | | |
| Only Service Hospital (50) | 12(24) | 13 | 1.1(±0.3) | 1 | 1-2 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 6(13.6) | 6 | 1 | 1 | 1-1 |
| Hospital Not accredited (14) | 6(42.9) | 7 | 1.2(±0.4) | 1 | 1-2 |
| **Type of Hospital** | | | | | |
| Type A (1) | | | | | |
| Type B (14) | 1(7.1) | 1 | 1 | 1 | 1-1 |
| Type C (26) | 5(19.2) | 5 | 1 | 1 | 1-1 |
| Type D (17) | 6(35.3) | 7 | 1.2(±0.4) | 1 | 1-2 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 12(22.2) | 13 | 1.1(±0.3) | 1 | 1-2 |
| Tertiary (4) | | | | | |

**Table 29: Distribution of dedicated eye department administrative personnel**

| Parameter | Hospitals reporting availability N (%) | No. available | Mean (±SD) | Median | Range |
|---|---|---|---|---|---|
| Responding Hospitals (58) | 11(19) | 13 | 1.2(±0.4) | 1 | 1-2 |
| **Ownership** | | | | | |
| Government owned (32) | 4(12.5) | 4 | 1 | 1 | 1-1 |
| Privately owned(26) | 7(26.9) | 9 | 1.3(±0.5) | 1 | 1-1 |
| **Administrative Status** | | | | | |
| Standalone eye hospital (7) | 3(42.9) | 8 | 1.7(±0.6) | 2 | 1-2 |
| Eye department part of a multispecialty hospital (51) | 8(15.7) | 5 | 1 | 1 | 1-1 |
| **Teaching Status** | | | | | |
| Teaching Hospital (8) | 1(12.5) | 1 | 1 | 1 | 1-1 |
| Only Service Hospital (50) | 10(20) | 12 | 1.2(±0.4) | 1 | 1-2 |
| **Accreditation Status** | | | | | |
| Accredited Hospitals (44) | 5(11.4) | 5 | 1 | 1 | 1-1 |
| Hospital Not accredited (14) | 6(42.9) | 8 | 1.3(±0.5) | 1 | 1-2 |
| **Type of Hospital** | | | | | |
| Type A (1) | | 0 | 0 | | |
| Type B (14) | 1(7.1) | 1 | 1 | 1 | 1-1 |
| Type C (26) | 4(15.4) | 4 | 1 | 1 | 1-1 |
| Type D (17) | 6(35.3) | 8 | 1.3(±0.5) | 1 | 1-1 |
| **Level of Service Delivery** | | | | | |
| Secondary (54) | 11(20.4) | 13 | 1.2(±0.4) | 1 | 1-2 |
| Tertiary (4) | NA | NA | NA | NA | NA |

**Table 30: Reported data on outpatient consultations and admissions at hospitals**

| **Parameter** | **No. of responding hospitals (N=58)** | **Frequency** | **Mean (±SD)** |
|---|---|---|---|
| New outpatient cases registered in 2018 | 53 (91.4) | 219,132 | 3778.1 (±468) |
| New ophthalmology cases registered in 2018 | 54 (93.1) | 95,535 | 1647.2 (±309) |
| Total Hospital inpatient admissions in 2018 | 56 (96.5) | 156,315 | 2695.1 (±395.4) |
| Total hospital ophthalmology inpatient admissions in 2018 | 54 (93.1) | 5112 | 88.1 (±71.5) |

**Table 31: Distribution of new outpatient consultations in general and eye care facilities**

| Type of facility | New outpatient registrations (2018) | | | | New ophthalmology registrations (2018) | | | |
|---|---|---|---|---|---|---|---|---|
| | **Total** | **Mean (±SD)** | **Median** | **Range** | **Total** | **Mean (±SD)** | **Median** | **Range** |
| **Ownership Status** | | | | | | | | |
| Government | 145,349 | 4688.6 (±2993.9) | 4882 | 1017-8756 | 70,019 | 2333.9 (±1859.6) | 1758.5 | 147-7095 |
| Private | 73,783 | 3353.7 (±2486.0) | 2369 | 107-8761 | 25,516 | 1109.4 (±1358.3) | 734 | 4-5812 |
| **Administrative Status** | | | | | | | | |
| Standalone eye hospital | 16,490 | 2355.7 (±2162.2) | 1303 | 832-6601 | 15,233 | 2176.1 (±1974.6) | 1303 | 364-5812 |
| Ophthalmology department as part of multi specialists hospital | 202,642 | 4405.2 (±2859.8) | 395.5 | 107-8761 | 80,302 | 1745.6 (±1737.6) | 1013 | 4-7095 |
| **Teaching Status** | | | | | | | | |
| Teaching hospital | 30,823 | 4403.2 (±3318.8) | 3673 | 1088-8756 | 9868 | 1409.7 (±1500.2) | 944 | 100-4556 |
| Solely services | 188,309 | 4093.6 (±2808.5) | 3397.5 | 107-8761 | 85,667 | 1862.3 (±1799.0) | 1172 | 4-7095 |
| **Accreditation Status** | | | | | | | | |
| Accredited | 196,141 | 4670 (±2841.0) | 4712 | 1017-8761 | 78,718 | 1919.9 (±1760.4) | 1343 | 83-7095 |
| Not accredited | 22,991 | 2090 (±1807.3) | 1795 | 107-6601 | 16,817 | 1401.4 (±1756.3) | 850.5 | 4-5812 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Type of Hospital** | | | | | | | | |
| Type A | 8001 | 8001 | 8001 | 8001-8001 | | | | |
| Type B | 51,773 | 3698.0 (±2790.8) | 2707.5 | 1082-8756 | 22,699 | 1621.3 (±1073.1) | 1585 | 361-4556 |
| Type C | 120,363 | 5015.1 (±2979.8) | 5302 | 1017-8761 | 55,410 | 2216.4 (±2043.7) | 1343 | 85-7095 |
| Type D | 38,995 | 2785.3 (±2152.3) | 2033.5 | 107-6601 | 17,426 | 1244.7 (±1666.2) | 679 | 4-5812 |
| **Level of service delivery** | | | | | | | | |
| Secondary | 201,445 | 4111.1 (±2895.4) | 3739 | 107-8761 | 84,469 | 1723.8 (1727.1) | 1014 | 4-7095 |
| Tertiary | 1,7687 | 4421.7 (±2506.9) | 3334.5 | 2873-8145 | 11,066 | 2766.5 (2096.3) | 2624 | 361-5457 |

**Table 32: Distribution of inpatient admissions at hospitals in Sulawesi Selatan**

| Type of facility | All inpatient admissions (2018) | | | | Ophthalmology inpatient admissions (2018) | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Mean (±SD) | Median | Range | Total | Mean (±SD) | Median | Range |
| **Ownership Status** | | | | | | | | |
| Government | 101,769 | 3180.3 (±2402.3) | 1907.5 | 1013-8969 | 3962 | 172.3 (±149.8) | 135 | 1-440 |
| Private | 54,546 | 3636.4 (±3365.3) | 2018 | 4-9159 | 1150 | 88.5 (±136.6) | 17 | 1-482 |
| **Administrative Status** | | | | | | | | |
| Standalone eye hospital | 225 | 225 | 225 | 225-225 | 225 | 225 | 225 | 225-225 |
| Ophthalmology department as part of multi specialists hospital | 156,090 | 3393.2 (±2706.9) | 1926.5 | 4-9159 | 4887 | 139.6 (±150.3) | 87 | 1-482 |
| **Teaching Status** | | | | | | | | |
| Teaching hospital | 33,899 | 4842.7 (±3493.6) | 4547 | 4-8969 | 442 | 73.6 (±93.5) | 48 | 1-240 |
| Solely services | 122,416 | 3060.4 (±2518.7) | 1875.5 | 225-9159 | 4670 | 155.6 (±155.1) | 89 | 1-482 |
| **Accreditation Status** | | | | | | | | |
| Accredited | 153,618 | 3572.5 (±2700.6) | 1928 | 900-9159 | 4886 | 143.7 (±150.6) | 88.5 | 1-482 |
| Not accredited | 2697 | 674.2 (±914.1) | 337.5 | 4-2018 | 226 | 113 (±158.3) | 113 | 1-225 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Type of Hospital** | | | | | | | | |
| Type A | 3395 | 3395 | 3395 | 3395-3395 | 1 | 1 | 1 | 1-1 |
| Type B | 56,321 | 4332.3 (±3145.1) | 3594 | 1013-8969 | 1147 | 114.7 (±149.2) | 79.5 | 2-482 |
| 1Type C | 83,310 | 3204.2 (±2674.7) | 1779.5 | 4-9159 | 3441 | 172.05 (±159.8) | 89 | 4-440 |
| Type D | 13,289 | 1898.4 (±1537.8) | 2018 | 225-4606 | 523 | 104.6 (±96.8) | 140 | 1-225 |
| **Level of service delivery** | | | | | | | | |
| Secondary | 143,170 | 3329.5 (±2659.6) | 1928 | 4-9159 | 4420 | 138.1 (±148.6) | 88.5 | 1-482 |
| Tertiary | 13,145 | 3286.2 (±3762.3) | 1527.5 | 1168-8922 | 692 | 173 (±169.8) | 183.5 | 2-323 |

A total of 72 ophthalmologists and 97 paediatricians were reported to be working at the responding hospitals. 79.2% of the ophthalmologists and 36.1% of the neonatologists were nominated for training programs (Table 33). 10.5% of the ophthalmologists who were nominated for training attended programs on paediatric eye care while 54.3% of neonatologists attending training in neonatology.

**Table 33: Reported training nominations at responding hospitals**

| **Parameter** | **Total Number** | **Total attending training** | **Type of training** |
|---|---|---|---|
| Ophthalmologists | 72 | 57 (79.2%) | Pediatric Ophthalmology – 6(10.5% ); Strabismus – 5(8.8% ) |
| Pediatricians | 97 | 35 (36.1%) | Neonatology – 19 (54.3% ); ROP – 1(2.8 ) |

# SECTION C: PEDIATRIC SPECIALTY EYE CARE

A total of 11 hospitals were covered to harness information on specialty pediatric ophthalmology services. The specialty hospitals were predominantly in the public funded sector (Table 34). The pediatric specialty services were only available in 4 districts – Bulukumba, Makassar, Palopo and Pare Pare. This therefore seems to be a good geographic mix with Bulukumba in the South East, Makasar in the South West, Pare Pare in central and Palopo in the North East of the province. Of the 11 hospitals, 4 (36.4%) are in Makassar, 3 (27.3%) in Palopo and 2 (18.2%) each in Bulukumba and Pare Pare.

The facilities available in the different hospitals providing specialized paediatric eye care services were assessed (Table 35). A dedicated paediatric eye care unit was available in 36.4% of the hospitals. There was a wide variation across the different categories of hospitals. Dedicated space for examining children was available in 36.4% (4) of the hospitals. However, wherever dedicated space for consultation was available, the condition of the same was rated as 'good'. A separate area to ensure privacy for the child's examination was available in 36.4% (4) and all these facilities were assessed to be in good condition. A similar proportion reported availability of space for testing children's vision and 75% of these spaces were reported to be in good condition. Paediatric refraction facility was reported by 45.4% (5) hospitals of which 60% were assessed as in good condition.

Child-friendly infrastructure is a necessity in paediatric hospitals. These include dedicated infant feeding and child play areas. Only 2 hospitals (18.2%) reported availability of dedicated infant feeding area and 4 (36.4%) hospitals reported availability of child play area (Table 36). Wherever child play area was available it was assessed to be in good condition. The paediatric eye care services were reported to be available daily by 72.7% of the respondent hospitals.

The availability of spectacle dispensing unit for children, low vision facility for children and child rehabilitation services were rudimentary (Table 37). Only 1 unit had a spectacle dispensing unit for children and this was in the private sector, standalone teaching non-accredited hospital. 42.9% of the public funded facilities reported availability of child rehabilitation services.

All the 11 hospitals stated that they have operation theatre facilities for paediatric eye surgery (Table 38). In 45.5% the operation room was available every day while in another 36.4% it was available once a week or based on need.

Hospitals reported using both paper and electronic digital records in most instances, both in the outpatient area as well as in the operation room (Table 39). Only digital records were not seen.

**Table 34: Paediatric Ophthalmology hospitals in Sulawesi Selatan**

| **Hospitals reporting specialized pediatric eye care services** | **Frequency** | **%** |
|---|---|---|
| Total number of responding hospitals | 11 | |
| **Ownership Status** | | |
| Government/ Army/Police/ Ministry | 7 | 63.6 |
| Private | 4 | 36.4 |
| **Administrative Status** | | |
| Standalone eye hospital | 3 | 27.3 |
| Ophthalmology department as part of multispecialty hospital | 8 | 72.7 |
| **Teaching Status** | | |
| Teaching Hospital | 4 | 36.4 |
| Solely service hospital | 7 | 63.6 |
| **Accreditation Status** | | |
| Accredited Hospital | 8 | 72.7 |
| Non accredited hospital | 3 | 27.3 |
| **Type of Hospital** | | |
| Type A | 1 | 9.1 |
| Type B | 5 | 45.4 |
| Type C | 3 | 27.3 |
| Type D | 2 | 18.2 |
| **Level of service delivery** | | |
| Secondary level | 7 | 63.6 |
| Tertiary level | 4 | 36.4 |

**Table 35: Child consultation facilities in the outpatient consultation area**

| Hospitals reporting specialized pediatric eye care services | Dedicated pediatric eye care unit available | Dedicated Pediatric outpatient consultation area available | Good condition of pediatric consultation room/area | Separate Pediatric examination room available | Good condition of pediatric examination room | Pediatric vision testing facility available | Good condition of pediatric vision testing facility | Pediatric refraction facility available | Good condition of pediatric refraction facility |
|---|---|---|---|---|---|---|---|---|---|
| | **N (%)** | **N (%)** | **N (%)** | **N(%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 4 (36.4) | 4 (36.4) | 3 (75.0) | 4 (36.4) | 4(100.0) | 4 (36.4) | 3 (75.0) | 5 (45.4) | 3 (60.0) |
| **Ownership Status** | | | | | | | | | |
| Government/ Army/Police/ Ministry (7) | 2 (28.6) | 3 (42.9) | 2 (66.7) | 3 (42.9) | 3 (100.0) | 3 (42.9) | 2 (66.7) | 3 (42.9) | 2 (66.7) |
| Private (4) | 2 (50.0) | 1 (25.0) | 1 (100.0) | 1 (25.0) | 1 (100.0) | 1 (25.0) | 1 (100.0) | 2 (50.0) | 1 (50.0) |
| **Administrative Status** | | | | | | | | | |
| Standalone eye hospital (3) | 1 (33.3) | 2 (66.7) | 2(100.0) | 2(66.7) | 2 (100.0) | 1 (33.3) | 1 (100.0) | 2 (66.7) | 2 (100.0) |
| Ophthalmology department as part of multispecialty hospital (8) | 3 (37.5) | 2 (25.0) | 1 (50.0) | 2 (25.0) | 2 (100.0) | 3 (37.5) | 2 (66.7) | 3 (37.5) | 1 (33.3) |
| **Teaching Status** | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Teaching Hospital (4) | 2 (50.0) | 4 ( 100.0) | 3 (75.0) | 3 (75.0) | 3 (100.0) | 2 (50.0) | 2 (100.0) | 3 (75.0) | 3 (100.0) |
| Solely service hospital (7) | 2 (28.6) | 0 | 0 | 1 (14.3) | 1 (100.0) | 2 (28.6) | 1 (50.0) | 2 (28.6) | 0 |
| **Accreditation Status** | | | | | | | | | |
| Accredited Hospital (8) | 2 (25.0) | 2 (25.0) | 1 (50.0) | 2 (25.0) | 2 (100.0) | 3 (37.5) | 2 (66.7) | 2 (25.0) | 1 (50.0) |
| Non accredited hospital (3) | 2 (66.7) | 2 (66.7) | 2 (100.0) | 2 (66.7) | 2 (100.0) | 1 (33.3) | 1 (100.0) | 3 (100.0) | 2 (66.7) |
| **Type of Hospital** | | | | | | | | | |
| Type A (1) | 0 | 1 (100.0) | 1 (100.0) | 1 (100.0) | 0 | 0 | 0 | 0 | 0 |
| Type B (5) | 2 (40.0) | 1 (20.0) | 1 (100.0) | 2 (40.0) | 2 (100.0) | 2 (40.0) | 1 (50.0) | 2 (40.0) | 1 (50.0) |
| Type C (3) | 1 (33.3) | 1 (33.3) | 1 (100.0) | 1 (33.3) | 1 (100.0) | 1 (33.3) | 1 (100.0) | 1 (33.3) | 1 (100.0) |
| Type D (2) | 1 (50.0) | 1 (50.0) | 1 (100.0) | 2 (100.0) | 1 (50.0) | 1 (50.0) | 1 (50.0) | 1 (50.0) | 1 (100.0) |
| **Level of service delivery** | | | | | | | | | |
| Secondary level (7) | 3 (42.9) | 1 (14.3) | 1 (100.0) | 2 (28.6) | 2 (100.0) | 3 (42.9) | 2 (66.7) | 3 (42.9) | 1 (33.3) |
| Tertiary level (4) | 1 (25.0) | 3 (75.0) | 2 (66.7) | 2 (50.0) | 2 (100.0) | 1 (25.0) | 1 (100.0) | 2 (50.0) | 2 (100.0) |

**Table 36: Child Support Services Reported at the paediatric eye care specialty units**

| Hospitals reporting specialized pediatric eye care services | Feeding Area for children available | Play room for children available | Good condition of children play room | Pediatric Clinic functions daily |
|---|---|---|---|---|
| | N (%) | N (%) | N (%) | N (%) |
| Total number of responding hospitals (11) | 2 (18.2) | 4 (36.4) | 4 (100.0) | 8 (72.7) |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 1 (14.3) | 3 (42.6) | 3 (100.0) | 5 (71.4) |
| Private (4) | 1 (25.0) | 1 (25.0) | 1 (100.0) | 3 (75.0) |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 1 (33.3) | 1 (33.3) | 1 (100.0) | 3 (100.0) |
| Ophthalmology department as part of multispecialty hospital (8) | 1 (12.5) | 3 (37.5) | 3 (100.0) | 5 (62.5) |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 2 (50.0) | 2 (50.0) | 2 (100.0) | 4 (100.0) |
| Solely service hospital (7) | 0- | 2 (28.6) | 2 (100.0) | 4 (66.7) |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 1 (12.5) | 3 (37.5) | 3 (100.0) | 6 (75.0) |
| Non accredited hospital (3) | 1 (33.3) | 1 (33.3) | 1 (100.0) | 2 (66.7) |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | 0 | 0 | 1 (100.0) |
| Type B (5) | 1 (20.0) | 3 (60.0) | 3 (100.0) | 3 (60.0) |
| Type C (3) | 0 | 0 | 0 | 2 (66.7) |
| Type D (2) | 1 (50.0) | 1 (50.0) | 1 (100.0) | 2 (100.0) |
| **Level of service delivery** | | | | |
| Secondary level (7) | 1 (14.3) | 2 (28.6) | 2 (100.0) | 5 (71.4) |
| Tertiary level (4) | 1 (25.0) | 2 (50.0) | 2 (100.0) | 3 (75.0) |

**Table 37: Paediatric facilities available in outpatient area**

| **Hospitals reporting specialized pediatric eye care services** | **Spectacle dispensing unit for children available** | **Low vision facility for children available** | **Child rehabilitation services available** |
|---|---|---|---|
| | **N (%)** | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 1 (9.1) | 2 (18.2) | 3 (27.3) |
| **Ownership Status** | | | |
| Government/ Army/Police/ Ministry (7) | 0 | 1 (14.3) | 3(42.9) |
| Private (4) | 1 (25.0) | 1 (25.0) | 0 |
| **Administrative Status** | | | |
| Standalone eye hospital (3) | 1 (33.3) | 1 (33.3) | 0 |
| Ophthalmology department as part of multispecialty hospital (8) | 0 | 1 (12.5) | 3 (37.5) |
| **Teaching Status** | | | |
| Teaching Hospital (4) | 1 (25.0) | 2 (50.0) | 2 (50.0) |
| Solely service hospital (7) | 0 | 0 | 1 (14.3) |
| **Accreditation Status** | | | |
| Accredited Hospital (8) | 0 | 1 (12.5) | 3 (37.5) |
| Non accredited hospital (3) | 1 (33.3) | 1 (33.3) | 0 |
| **Type of Hospital** | | | |
| Type A (1) | 0 | 0 | 1 (100.0) |
| Type B (5) | 0 | 1 (20.0) | 1 (20.0) |
| Type C (3) | 0 | 0 | 1 (33.3) |
| Type D (2) | 1 (50.0) | 1 (50.0) | 0 |
| **Level of service delivery** | | | |
| Secondary level (7) | 1 (14.3) | 1 (14.3) | 1 (14.3) |
| Tertiary level (4) | 0 | 1 (25.0) | 2 (50.0) |

**Table 38: Availability of paediatric eye surgical facilities**

| **Hospitals reporting specialized pediatric eye care services** | **Availability of OR for pediatric care** | **OR available daily** | **OR available 2-3 times a week** | **OR available based on need** |
|---|---|---|---|---|
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 11 (100.0) | 5 (45.5) | 2 (18.2) | 4 (36.4) |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 7 (100.0) | 1 (14.3) | 2 (28.6) | 4 (57.1) |
| Private (4) | 4 (100.0) | 4 (100.0) | 0 | 0 |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 3 (100.0) | 2 (66.7) | 0 | 1 (33.3) |
| Ophthalmology department as part of multispecialty hospital (8) | 8 (100.0) | 3 (37.5) | 2 (25.0) | 3 (37.5) |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 4 (100.0) | 1 (25.0) | 1 (25.0) | 0 |
| Solely service hospital (7) | 7 (100.0) | 4 (57.1) | 1 (14.3) | 2 (28.6) |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 8 (100.0) | 3 (37.5) | 2 (25.0) | 3 (37.5) |
| Non accredited hospital (3) | 3 (100.0) | 2 (66.7) | | 1 (33.3) |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 0 | 0 | 1 (100.0) |
| Type B (5) | 5 (100.0) | 2 (40.0) | 1 (20.0) | 2 (40.0) |
| Type C (3) | 3 (100.0) | 1 (33.3) | 1 (33.3) | 1 (33.3) |
| Type D (2) | 2 (100.0) | 2 (100.0) | 0 | 0 |
| **Level of service delivery** | | | | |
| Secondary level (7) | 7 (100.0) | 5 (71.4) | 1 (14.3) | 1 (14.3) |
| Tertiary level (4) | 4 (100.0) | 0 | 1 (25.0) | 3 (75.0) |

**Table 39: Data Capture and Retrieval Facilities**

| **Hospitals reporting specialized pediatric eye care services** | **Availability of EMR in OP clinics** | **Availability of EMR in OR** |
|---|---|---|
| | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 5 (45.5) | 5 (45.5) |
| **Ownership Status** | | |
| Government/ Army/Police/ Ministry (7) | 4 (57.1) | 4 (57.1) |
| Private (4) | 1 (25.0) | 1 (25.0) |
| **Administrative Status** | | |
| Standalone eye hospital (3) | 1 (33.3) | 1 (33.3) |
| Ophthalmology department as part of multispecialty hospital (8) | 4 (50.0) | 4 (50.0) |
| **Teaching Status** | | |
| Teaching Hospital (4) | 2 (50.0) | 3 (75.0) |
| Solely service hospital (7) | 2 (28.6) | 2 (28.6) |
| **Accreditation Status** | | |
| Accredited Hospital (8) | 4 (50.0) | 4 (50.0) |
| Non accredited hospital (3) | 1 (33.3) | 1 (33.3) |
| **Type of Hospital** | | |
| Type A (1) | 0 | 1 (100.0) |
| Type B (5) | 3 (60.0) | 2 (40.0) |
| Type C (3) | 2 (66.7) | 1 (33.3) |
| Type D (2) | 1 (50.0) | 1 (50.0) |
| **Level of service delivery** | | |
| Secondary level (7) | 2 (28.6) | 2 (28.6) |
| Tertiary level (4) | 3 (75.0) | 3 (75.0) |

It was observed that sharing a hard copy of the clinical findings with the child's family was practiced only by 1 out of every 5 hospitals (Table 40). The practice was patchy even where it was reported to be in use. Half the paediatric eye hospitals reported that they have a systematic modality for following-up children who needed help. The only modality that has been used is telephonic tracking.

## ROP Screening and Management

Nearly half the hospitals (45.5%) reported that they had an NICU within the hospital premises while another 18.2% reported that they were linked with an NICU in the vicinity (Table 41). Access to NICU was substantially higher in the government sector, multispecialty hospitals tertiary level facilities.

Of the 11 responding hospitals, 63.6% (7) reported being involved in ROP screening programs while 36.4% reported being engaged in ROP treatment also. This was significantly higher in government sector hospitals (Table 42).

ROP screening was mostly done at NICU where the eye team would visit periodically, especially in the government sector (Table 43). However, in the private sector the babies were being transported to the eye hospital for screening. This is not a desirable practice as the risk to the sick new-borns increases. Screening was mostly done by Indirect Ophthalmoscopy and by Ophthalmologists. Treatment for ROP was mostly facilitated either in the NICU or the OR in the maternal and child health hospital itself (Table 44). In a few instances the treatment was being given in the eye department OR. Laser and anti-VEGF were the commonest modalities for treatment (Table 45).

## Availability of clinical algorithms and protocols

The availability of clinical guidelines and protocols was poor with only 27.3% reporting availability in the outpatient consultation area (Table 46). The availability of ROP protocols either in the paediatric OR, or the ROP clinic was poor. The sharing of ROP information sheet with the child's parents was also not a regular feature.

**Table 40: Information sharing and follow up of children**

| Hospitals reporting specialized pediatric eye care services | Hard copy of exam result given to parents | Tracking system for children needing follow up available | Tracking done by telephone |
|---|---|---|---|
| | N (%) | N (%) | N (%) |
| Total number of responding hospitals (11) | 2 (18.2) | 6 (54.5) | 6 (100.0) |
| **Ownership Status** | | | |
| Government/ Army/Police/ Ministry (7) | 2 (28.6) | 4 (57.1) | 4 (100.0) |
| Private (4) | 0 | 2 (50.0) | 2 (100.0) |
| **Administrative Status** | | | |
| Standalone eye hospital (3) | 0 | 2 (66.7) | 2 (100.0) |
| Ophthalmology department as part of multispecialty hospital (8) | 2 (25.0) | 4 (50.0) | 4 (100.0) |
| **Teaching Status** | | | |
| Teaching Hospital (4) | 0 | 2 (50.0) | 2 (100.0) |
| Solely service hospital (7) | 2 (28.6) | 4 (57.1) | 4 (100.0) |
| **Accreditation Status** | | | |
| Accredited Hospital (8) | 2 (25.0) | 3 (37.5) | 3 (100.0) |
| Non accredited hospital (3) | 0 | 3 (100.0) | 3 (100.0) |
| **Type of Hospital** | | | |
| Type A (1) | 0 | 0 | 0 |
| Type B (5) | 1 (20.0) | 2 (40.0) | 2 (100.0) |
| Type C (3) | 1 (33.3) | 3 (100.0) | 3 (100.0) |
| Type D (2) | 0 | 1 (50.0) | 1 (100.0) |
| **Level of service delivery** | | | |
| Secondary level (7) | 1 (14.3) | 4 (57.1) | 4 (100.0) |
| Tertiary level (4) | 1 (25.0) | 2 (50.0) | 2 (100.0) |

**Table 41: Availability of Neonatal Intensive Care Units (NICUs)**

| **Hospitals reporting specialized pediatric eye care services** | **Availability of NICU in hospital** | **NICU not available in hospital but in vicinity** |
|---|---|---|
| | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 5 (45.5) | 2 (18.2) |
| **Ownership Status** | | |
| Government/ Army/Police/ Ministry (7) | 5 (71.4) | 2 (28.6) |
| Private (4) | 0 | 0 |
| **Administrative Status** | | |
| Standalone eye hospital (3) | 0 | 0 |
| Ophthalmology department as part of multispecialty hospital (8) | 5 (62.5) | 2 (25.0) |
| **Teaching Status** | | |
| Teaching Hospital (4) | 2 (50.0) | 1 (25.0) |
| Solely service hospital (7) | 3 (42.9) | 1 (14.3) |
| **Accreditation Status** | | |
| Accredited Hospital (8) | 5 (62.5) | 2 (25.0) |
| Non accredited hospital (3) | 0 | 0 |
| **Type of Hospital** | | |
| Type A (1) | 1 (100.0) | 0 |
| Type B (5) | 4 (80.0) | 1 (20.0) |
| Type C (3) | 0 | 1 (33.3) |
| Type D (2) | 0 | 0 |
| **Level of service delivery** | | |
| Secondary level (7) | 2(28.6) | 1 (14.3) |
| Tertiary level (4) | 3 (75.0) | 1 (25.0) |

**Table 42: Engagement with ROP Screening and treatment activities**

| **Hospitals reporting specialized pediatric eye care services** | **Hospital involved in ROP screening N (%)** | **Hospital involved in ROP treatment N (%)** |
|---|---|---|
| Total number of responding hospitals (11) | 7 (63.6) | 4 (36.4) |
| **Ownership Status** | | |
| Government/ Army/Police/ Ministry (7) | 6 (85.7) | 3 (42.9) |
| Private (4) | 1 (25.0) | 1 (25.0) |
| **Statistical Difference** | **$X^2$-7.54; p<0.006** | |
| **Administrative Status** | | |
| Standalone eye hospital (3) | 2 (66.7) | 1 (33.3) |
| Ophthalmology department as part of multispecialty hospital (8) | 5 (62.5) | 3 (37.5) |
| **Teaching Status** | | |
| Teaching Hospital (4) | 4 (100.0) | 2 (50.0) |
| Solely service hospital (7) | 3 (42.9) | 2 (28.6) |
| **Accreditation Status** | | |
| Accredited Hospital (8) | 5 (62.5) | 3 (37.5) |
| Non accredited hospital (3) | 2 (66.7) | 1 (33.3) |
| **Type of Hospital** | | |
| Type A (1) | 1 (100.0) | 0 |
| Type B (5) | 3 (60.0) | 2 (40.0) |
| Type C (3) | 2 (66.7) | 1 (33.3) |
| Type D (2) | 1 (50.0) | 1 (50.0) |
| **Level of service delivery** | | |
| Secondary level (7) | 3 (42.9) | 2 (28.6) |
| Tertiary level (4) | 4 (100.0) | 2 (50.0) |

**Table 43: ROP screening modalities utilized**

| **Hospitals reporting specialized pediatric eye care services** | **Eye team visits NICU for screening** | **Baby taken to eye clinic for screening** | **Babies examined with Indirect Ophthalmoscope** | **Screening done by ophthalmologist in NICU** | **Frequency of screening at weekly intervals** |
|---|---|---|---|---|---|
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 6 (54.5) | 5 (45.5) | 10 (90.9) | 5 (45.5) | 2 (18.2) |
| **Ownership Status** | | | | | |
| Government/ Army/Police/ Ministry (7) | 6 (85.7) | 1 (14.3) | 7 (100.0) | 5 (71.4) | 2 (28.6) |
| Private (4) | 0 | 4 (100.0) | 3 (75.0) | 0 | 0 |
| **Statistical difference** | **$X^2$-7.54; p=0.006** | | | | |
| **Administrative Status** | | | | | |
| Standalone eye hospital (3) | 0 | 3 (100.0) | 3 (100.0) | 0 | 0 |
| Ophthalmology department as part of multispecialty hospital (8) | 6 (75.0) | 2 (25.0) | 7 (87.5) | 5 (62.5) | 2 (25.0) |
| **Statistical difference** | **$X^2$-4.95; p=0.03** | | | | |
| **Teaching Status** | | | | | |
| Teaching Hospital (4) | 2 (50.0) | 2 (50.0) | 4 (100.0) | 2 (50.0) | 1 (25.0) |
| Solely service hospital (7) | 4 (57.1) | 3 (42.9) | 6 ( 85.7) | 3 (42.9) | 1 (14.3) |

| | | | | | |
|---|---|---|---|---|---|
| **Accreditation Status** | | | | | |
| Accredited Hospital (8) | 6 (75.0) | 2 (25.0) | 8 (100.0) | 5 (62.5) | 2 (25.0) |
| Non accredited hospital (3) | 0 | 3 (100.0) | 2 (66.7) | 0 | 0 |
| **Statistical difference** | **$X^2$-4.95; p=0.03** | | | | |
| **Type of Hospital** | | | | | |
| Type A (1) | 1 (100.0) | 0 | 1 (100.0) | 1 (100.0) | 1 (100.0) |
| Type B (5) | 4 (80.0) | 1 (20.0) | 5 (100.0) | 3 (60.0) | 1 (20.0) |
| Type C (3) | 1 (33.3) | 2 (66.7) | 2 (66.7) | 1 (33.3) | 0 |
| Type D (2) | 0 | 2 (100.0) | 2 (100.0) | 0 | 0 |
| **Level of service delivery** | | | | | |
| Secondary level (7) | 3 (42.9) | 4 (57.1) | 6 (85.7) | 2 (28.6) | 1 (14.3) |
| Tertiary level (4) | 3 (75.0) | 1 (25.0) | 4 (100.0) | 3 (75.0) | 1 (25.0) |

**Table 44: Locations where ROP treatment is undertaken**

| **Hospitals reporting specialized pediatric eye care services** | **Treated in NICU N (%)** | **OR in MCH Hospital N (%)** | **OR in eye department N (%)** |
|---|---|---|---|
| Total number of responding hospitals (11) | 2 (18.2) | 11 (100.0) | 2 (18.2) |
| **Ownership Status** | | | |
| Government/ Army/Police/ Ministry (7) | 1 (14.3) | 7(1000) | 2 (28.6) |
| Private (4) | 1(25.0) | 4 (100.0) | 0 |
| **Administrative Status** | | | |
| Standalone eye hospital (3) | 0 | 3 (100.0) | 1 (33.3) |
| Ophthalmology department as part of multispecialty hospital (8) | 2 (25.0) | 8(100.0) | 1 (12.5) |
| **Teaching Status** | | | |
| Teaching Hospital (4) | 0 | 3 (75.0) | 2 (50.0) |
| Solely service hospital (7) | 2 (28.6) | 5 (71.4) | 0 |
| **Accreditation Status** | | | |
| Accredited Hospital (8) | 1 (12.5) | 8 (100.0) | 1 (12.5) |
| Non accredited hospital (3) | 1 (33.3) | 3 (100.0) | 1 (33.3) |
| **Statistical difference** | | | |
| **Type of Hospital** | | | |
| Type A (1) | 0 | 1 (100.0) | 0 |
| Type B (5) | 1 (20.0) | 5 (100.0) | 1 (20.0) |
| Type C (3) | 1 (33.3) | 2 (66.7) | 1 (33.3) |
| Type D (2) | 0 | 2 (100.0) | 0 |
| **Level of service delivery** | | | |
| Secondary level (7) | 2 (28.6) | 7 (100.0) | 0 |
| Tertiary level (4) | 0 | 4 (100.0) | 2 (50.0) |

**Table 45: Treatment modalities for ROP adopted**

| **Hospitals reporting specialized pediatric eye care services** | **Laser** | **Anti VEGF** |
|---|---|---|
| | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 2 (18.2) | 1 (9.1) |
| **Ownership Status** | | |
| Government/ Army/Police/ Ministry (7) | 2 (28.6) | 1 (14.3) |
| Private (4) | 0 | 0 |
| **Administrative Status** | | |
| Standalone eye hospital (3) | 0 | 0 |
| Ophthalmology department as part of multispecialty hospital (8) | 2 (25.0) | 1 (12.5) |
| **Teaching Status** | | |
| Teaching Hospital (4) | 2 (50.0) | 1 25.0) |
| Solely service hospital (7) | 0 | 1 (14.3) |
| **Accreditation Status** | | |
| Accredited Hospital (8) | 2 (25.0) | 1 (12.5) |
| Non accredited hospital (3) | 0 | 0 |
| **Statistical difference** | | |
| **Type of Hospital** | | |
| Type A (1) | 1 (100.0) | 1 (100.0) |
| Type B (5) | 1 (20.0) | 0 |
| Type C (3) | 0 | 0 |
| Type D (2) | 0 | 0 |
| **Level of service delivery** | | |
| Secondary level (7) | 0 | 0 |
| Tertiary level (4) | 2 (50.0) | 1(25.0) |

**Table 46: Availability of protocols**

| **Hospitals reporting specialized pediatric eye care services** | **Printed protocols available on pediatric eye care in outpatient area** | **Printed ROP protocol available in pediatric OR** | **Printed ROP protocol available in ROP Clinic** | **Printed ROP information sheet provided to parents** |
|---|---|---|---|---|
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 3 (27.3) | 2 (18.2) | 2 (18.2) | 3 (27.3) |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 2 (28.6) | 1 (14.3) | 1 (14.3) | 2 (28.6) |
| Private (4) | 1 (25.0) | 1 (25.0) | 1 (25.0) | 1 (25.0) |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 1 (33.3) | 1 (33.3) | 1 (33.3) |
| Ophthalmology department as part of multispecialty hospital (8) | 1 (12.5) | 1 (12.5) | 1 (12.5) | 2 (25.0) |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 2 (50.0) | 3 (75.0) | 1 (25.0) | 2 (50.0) |
| Solely service hospital (7) | 1 (16.7) | 1 (16.7) | 1 (16.7) | 1 (16.7) |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 1 (12.5) | 1 (12.5) | 1 (12.5) | 2 (25.0) |
| Non accredited hospital (3) | 2 (66.7) | 1 (33.3) | 1 (33.3) | 1 (33.3) |
| **Statistical difference** | | | | |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | 0 | 0 | 0 |

| | | | | |
|---|---|---|---|---|
| Type B (5) | 1 (20.0) | 1 (20.0) | 1 (20.0) | 2 (40.0) |
| Type C (3) | 1 (33.3) | 0 | 0 | 0 |
| Type D (2) | 1 (50.0) | 1 (50.0) | 1 (50.0) | 1 (50.0) |
| **Level of service delivery** | | | | |
| Secondary level (7) | 1 (16.7) | 1 (16.7) | 1 (16.7) | 1 (16.7) |
| Tertiary level (4) | 2 (50.0) | 1 (25.0) | 1 (25.0) | 2 (50.0) |

**Table 47: ROP related parameters**

| **Hospitals reporting specialized pediatric eye care services** | **Cases referred by neonatologist to ophthalmologist** | **National ROP guidelines followed for all preterm** | **All premature babies are screened** | **No routine ROP screening performed in the hospital** |
|---|---|---|---|---|
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Total number of responding hospitals (11) | 7 (63.6) | 9 (81.8) | 4 (36.4) | 4 (36.4) |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 6 (85.7) | 7 (100.0) | 4 (57.1) | 2 (28.6) |
| Private (4) | 1 (25.0) | 2 (50.0) | 0 | 2 (50.0) |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 0 | 2 (66.7) | 0 | 1 (33.3) |
| Ophthalmology department as part of multispecialty hospital (8) | 7 (87.5) | 7 (87.5) | 4 (50.0) | 3 (37.5) |
| **Teaching Status** | | | | |

| | | | | |
|---|---|---|---|---|
| Teaching Hospital (4) | 2 (50.0) | 4 (100.0) | 2 (50.0) | 1 (25.0) |
| Solely service hospital (7) | 5 (71.4) | 5 (71.4) | 2 (28.6) | 3 (42.9) |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 7 (87.5) | 7 (87.5) | 4 (50.0) | 4 (50.0) |
| Non accredited hospital (3) | 0 | 2 (66.7) | 0 | 0 |
| **Statistical difference** | | | | |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 1 (100.0) | 1 (100.0) | 1 (100.0) |
| Type B (5) | 5 (100.0) | 5 (!00.0) | 3 (60.0) | 3 (60.0) |
| Type C (3) | 1 (33.3) | 2 (66.7) | 0 | 0 |
| Type D (2) | 0 | 1 (50.0) | 0 | 0 |
| **Level of service delivery** | | | | |
| Secondary level (7) | 4 (57.1) | 5 (71.4) | 1 (14.3) | 1 (14.3) |
| Tertiary level (4) | 3 (75.0) | 4 (100.0) | 3 (75.0) | 3 (75.0) |

It was reported that national ROP guidelines were followed for all preterm births in 81.8% of the respondent hospitals (Table 47). In 36.4% all premature babies were screened for ROP as a policy while in another equivalent proportion (36.4%) routine ROP screening was not undertaken. There were significant variations across different categories of eye care providers.

It was observed that 81.8% hospitals reported that mothers of premature babies were routinely counselled about risk factors for ROP but a lesser proportion of hospitals counselled specifically about screening and managing ROP (63.6%). In nearly half the hospitals, the counselling was routinely done by ophthalmologists. Reassuringly, 81.8% hospitals reporting having specific child protection policies in place (Table 48).

## Available Human Resources

The availability of key human resources including general practitioners (GP), Ophthalmologists, Optometrists, Ophthalmic Nurses and key logistic support staff was also elicited. GPs were reported to be present by 72.7% hospitals overall (Table 49). The mean number of GPs was 9.7 (±7). 3 hospitals did not report on the number of GPs.

The number of ophthalmologists working at the hospitals was also enquired. 81.8% of the hospitals providing information on ophthalmologists working at the hospitals (Table 50). The mean number of ophthalmologists was 6.7 (±6.7). Standalone eye hospitals, teaching hospitals and non-accredited hospitals reported highest mean number of ophthalmologists.

**Table 48: Counselling for ROP and Child Protection Policies in the hospitals**

| **Hospitals reporting specialized pediatric eye care services** | **Mothers of premature babies advised on risk factors of ROP N (%)** | **All mothers of premature babies counselled about ROP N (%)** | **Routine counselling done by ophthalmologist N (%)** | **Child protection policies in place in hospital N (%)** |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 9 (81.8) | 7 (63.6) | 5 (45.5) | 9 (81.8) |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 7 (100.0) | 5 (71.4) | 3 (42.9) | 6 (85.7) |
| Private (4) | 2 (50.0) | 2 (50.0) | 2 (50.0) | 3 (75.0) |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 2 (66.7) | 2 (66.7) | 2 (66.7) |
| Ophthalmology department as part of multispecialty hospital (8) | 7 (87.5) | 5 (62.5) | 3 (37.5) | 7 (87.5) |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 4 (100.0) | 3 (75.0) | 2 (50.0) | 3 (75.0) |
| Solely service hospital (7) | 5 (71.4) | 4 (57.1) | 3 (42.9) | 6 (85.7) |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 7 (87.5) | 5(62.5) | 3 (37.5) | 6 (75.0) |
| Non accredited hospital (3) | 2 (66.7) | 2 (66.7) | 2 (66.7) | 3 (100.0) |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 1 (100.0) | 0 | 1 (100.0) |
| Type B (5) | 5 (100.0) | 0 | 2 (40.0) | 4 (80.0) |
| Type C (3) | 2 (66.7) | 2 (66.7) | 2 (66.7) | 3 (100.0) |
| Type D (2) | 1 (50.0) | 0 | 1 (50.0) | 1 (50.0) |
| **Level of service delivery** | | | | |
| Secondary level (7) | 5 (71.4) | 4 (57.1) | 3 (42.9) | 6 (85.7) |
| Tertiary level (4) | 4 (75.0) | 3 (75.0) | 2 (50.0) | 3 (75.0) |

**Table 49: Availability of General Practitioners at Responding Hospitals**

| Hospitals | Hospitals with general practitioner N (%) | Number of general practitioners N | Mean general practitioners Mean (±SD) | Range |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 8 (72.7) | 78 | 9.7 (±7) | 3-21 |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 6 (85.7) | 71 | 11.8[±6.8] | 3-21 |
| Private (4) | 2 (50.0) | 7 | 3.5 [±0.7] | 3-4 |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 3 | 3 | 3 |
| Ophthalmology department as part of multispecialty hospital (8) | 6 (75.0) | 72 | 12[±6.6] | 4-21 |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 4 (100.0) | 35 | 8.7 [±7.5] | 3-19 |
| Solely service hospital (7) | 4 (57.1) | 43 | 10.7[±7.2] | 4-21 |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 6 (75.0) | 72 | 12 [±6.6] | 4-21 |
| Non accredited hospital (3) | 2 (66.7) | 6 | 3 | 3 |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 19 | 19 | 19 |
| Type B (5) | 4 (80.0) | 45 | 11.2 [±7.0] | 4-21 |
| Type C (3) | 2 (66.7) | 11 | 5.5 [±3.5] | 3-8 |
| Type D (2) | 1 (50.0) | 3 | 3 | 3 |
| **Level of service delivery** | | | | |
| Secondary level (7) | 5 (71.4) | 46 | 9.2 [±7.1] | 3-21 |
| Tertiary level (4) | 3 (75.0) | 32 | 10.6[±8.0] | 3-19 |

**Table 50: Distribution of Ophthalmologists at responding hospitals**

| Hospitals | Hospitals with ophthalmologists N (%) | Number of ophthalmologists | Mean ophthalmologists Mean (±SD) | Range |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 9 (81.8) | 60 | 6.7 (±6.7) | 1-17 |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 7 (100.0) | 42 | 6 [±5.9] | 1-17 |
| Private (4) | 2 (50.0) | 18 | 9 [±11.3] | 1-17 |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 27 | 13.5[±4.9] | 10-17 |
| Ophthalmology department as part of multispecialty hospital (8) | 7 (87.5) | 33 | 4.7 [±5.9] | 1-17 |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 4 (100.0) | 52 | 13[±4.7] | 8-17 |
| Solely service hospital (7) | 5 (71.4) | 8 | 1.6[±0.5] | 1-2 |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 7 (87.5) | 33 | 4.7 [±5.9] | 1-17 |
| Non accredited hospital (3) | 2 (66.7) | 27 | 13.5 [±4.9] | 10-17 |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 8 | 8 | 8 |
| Type B (5) | 5 (100.0) | 24 | 4.8[±6.8] | 1-17 |
| Type C (3) | 2 (66.7) | 11 | 5.5 [±6.3] | 1-10 |
| Type D (2) | 1 (50.0) | 17 | 17 | 17 |
| **Level of service delivery** | | | | |
| Secondary level (7) | 5 (71.4) | 23 | 4.6[±6.9] | 1-17 |
| Tertiary level (4) | 4 (100.0) | 37 | 9.2[±6.1] | 2-17 |

Optometrists were a rare human resource in Sulawesi Selatan. Only 4 hospitals (36.4%) reported employing optometrists (Table 51). The mean number of optometrists reported by the 4 hospitals was 2 (±1.4).

81.8% hospitals responded on the availability of ophthalmic nurses (Table 52). The mean number of ophthalmic nurses reported was 10(±10.8). Standalone eye hospitals and non-accredited hospitals reported higher mean numbers.

Only 63.6% hospitals reported on available neonatologists (Table 53). The mean was 4.6(±6.8). Standalone eye hospitals and Type D hospitals did not report on availability of neonatologists. Only 5 hospitals provided information on availability of trained nurses in the NICU (Table 54). The mean number of trained nurses in the NICU was 20.2 (±8.3). Private hospitals, standalone eye hospitals, non-accredited hospitals and Type C and D hospitals did not report any availability of NICU nursing personnel. 72.7% hospitals reported the availability of anesthetists while 45.5% reported availability of a child counsellor (Table 55). The availability of computer operators was reported by only 27.3% hospitals (Table 56). The lack of availability of a dedicated computer operator will significantly impact the collection and analysis of data. The availability of quality assurance officers was also only reported by 36.4% of the hospitals. Quality assurance officers have a major responsibility in monitoring data and their lack will affect quality.

Continuing professional development programs did not appear to be a priority as only 45.5% hospitals reported that they had nominated ophthalmologists for skilling programs (Table 57). A total of 40 ophthalmologists were nominated by 5 hospitals (Mean of 4.4). 25% of those trained were nominated for training in strabismus. Cataract and glaucoma were the other domains for which training was sought. Only 11 optometrists/ ophthalmic assistants were nominated for professional development programs with ROP screening followed by orthoptics being the commonest (Table 58). Among nursing professionals, ROP screening was the commonest program for which they were nominated (Table 59).

**Table 51: Distribution of Optometrists at responding hospitals**

| **Hospitals** | **Hospitals with optometrists N (%)** | **Number of optometrists** | **Optometrists Mean (±SD)** | **Range** |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 4 (36.4) | 8 | 2 (±1.4) | 1-4 |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 3 (42.9) | 6 | 2 [±1.7] | 1-4 |
| Private (4) | 1 (25.0) | 2 | 2 | 2 |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 6 | 3[±1.4] | 2-4 |
| Ophthalmology department as part of multispecialty hospital (8) | 2 (25.0) | 2 | 1 | 1 |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 3 (75.0) | 7 | 2.3 [±1.5] | 1-4 |
| Solely service hospital (7) | 1 (14.3) | 1 | 1 | 1 |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 2 (25.0) | 2 | 1 | 1 |
| Non accredited hospital (3) | 2 (66.7) | 6 | 3[±1.4] | 2-4 |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | | | |
| Type B (5) | 1 (20.0) | 1 | 1 | 1 |
| Type C (3) | 2 (66.7) | 5 | 2.5 [±2.1] | 1-4 |
| Type D (2) | 1 (50.0) | 2 | 2 | 2 |
| **Level of service delivery** | | | | |
| Secondary level (7) | 2 (28.6) | 3 | 1.5 [±0.7] | 1-2 |
| Tertiary level (4) | 2 (50.0) | 5 | 2.5 [±2.1] | 1-4 |

**Table 52: Distribution of Ophthalmic Nurses at responding hospitals**

| Hospitals | Hospitals with ophthalmic nurses N (%) | Number of ophthalmic nurses | Mean (±SD) | Range |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 9 (81.8) | 90 | 10(±10.8) | 1-32 |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 7 (100.0) | 68 | 9.7 [±11.0] | 2-32 |
| Private (4) | 2 (50.0) | 22 | 11[±14.1] | 1-21 |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 53 | 26.5 [±7.7] | 21-32 |
| Ophthalmology department as part of multispecialty hospital (8) | 7 (87.5) | 37 | 5.3 [±5.3] | 1-17 |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 4 (100.0) | 73 | 18.2[±11.9] | 3-32 |
| Solely service hospital (7) | 5 (71.4) | 17 | 3.4 [±1.8] | 1-5 |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 7 (87.5) | 37 | 5.2 [±5.3] | 1-17 |
| Non accredited hospital (3) | 2 (66.7) | 53 | 26.5 [±7.7] | 21-32 |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 3 | 3 | 3 |
| Type B (5) | 5 (100.0) | 32 | 6.4[±6.1] | 1-17 |
| Type C (3) | 2 (66.7) | 34 | 17[±21.2] | 2-32 |
| Type D (2) | 1 (50.0) | 21 | 21 | 21 |
| **Level of service delivery** | | | | |
| Secondary level (7) | 5 (71.4) | 34 | 6.8 [±8.1] | 1-21 |
| Tertiary level (4) | 4 (100.0) | 56 | 14 [±3.5] | 3-32 |

**Table 53: Distribution of Paediatricians or Neonatologists at responding hospitals**

| Hospitals | No. of hospitals reporting N (%) | Number of pediatricians/ neonatologists | Mean (±SD) | Range |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 7 (63.6) | 32 | 4.6(±6.8) | 1-20 |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 6 (85.7) | 31 | 5.1 (±7.2) | 2-20 |
| Private (4) | 1 (25.0) | 1 | 1 | 1 |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 0 | 0 | | |
| Ophthalmology department as part of multispecialty hospital (8) | 7 (87.5) | 32 | 4.5 (±6.8) | 1-20 |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 2 (50.0) | 22 | 11(±12.7) | 2-20 |
| Solely service hospital (7) | 5 (71.4) | 10 | 2(±0.7) | 1-3 |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 7 (87.5) | 32 | 4.5 (±6.8) | 2-20 |
| Non accredited hospital (3) | 0 | 0 | | |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 20 | 20 | 20 |
| Type B (5) | 5 (100.0) | 10 | 2(±0.7) | 1-3 |
| Type C (3) | 1 (33.3) | 2 | 2 | 2 |
| Type D (2) | 0 | 0 | | 0 |
| **Level of service delivery** | | | | |
| Secondary level (7) | 4 (57.1) | 7 | 1.7(±0.5) | 1-2 |
| Tertiary level (4) | 3 (75.0) | 25 | 8.3(±10.1) | 2-20 |

**Table 54: Availability of trained nurses in Neonatal Intensive Care Units**

| **Hospitals reporting specialized pediatric eye care services** | **Hospitals with NICU Nurses N (%)** | **Number** | **Mean (±SD)** | **Range** |
|---|---|---|---|---|
| Responding hospitals (11) | 5 (45.5) | 101 | 20.2 (±8.3) | 11-32 |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 5 (71.4) | 101 | 20.2(±8.3) | 11-32 |
| Private (4) | 0 | 0 | | |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 0 | 0 | | |
| Ophthalmology department as part of multispecialty hospital (8) | 5 (62.5) | 101 | 20.2 (±8.3) | 11-32 |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 2 (50.0) | 43 | 21.5(±14.8) | 11-32 |
| Solely service hospital (7) | 3 (42.9) | 58 | 19.3(±5.1) | 15-25 |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 5 (62.5) | 101 | 20.2 (±8.3) | 11-32 |
| Non accredited hospital (3) | 0 | 0 | | |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 32 | 32 | 32 |
| Type B (5) | 4 (80.0) | 69 | 17.2(±5.9) | 11-25 |
| Type C (3) | 0 | 0 | | |
| Type D (2) | 0 | 0 | | |
| **Level of service delivery** | | | | |
| Secondary level (7) | 2 (28.6) | 40 | 20(±7.0) | 15-25 |
| Tertiary level (4) | 3 (75.0) | 61 | 20.3(±10.6) | 11-32 |

**Table 55: Other human resources reported**

| Hospitals reporting specialized pediatric eye care services | Hospitals with anesthetists N (%) | Number of anesthetists (Mean; ±SD) | Hospitals with child counsellor N (%) | Number of counsellors (Mean; ±SD) |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 8 (72.7) | 39 (4.9; ±5.1) | 5 (45.5) | 9(1.8; ±1.3) |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 6 (85.7) | 36 (6; ±5.5) | 4 (57.1) | 7 (1.7; ±1.5) |
| Private (4) | 2 (50.0) | 3 (1.5; ±0.7) | 1 (25.0) | 2 (2) |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 1 (33.3) | 1 (1) | 2 (66.7) | 6 (3; ±1.4) |
| Ophthalmology department as part of multispecialty hospital (8) | 7 (87.5) | 38 5.4; ±5.2) | 3 (37.5) | 3 (1) |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 3(75.0) | 27 (9; ±7) | 3 (75.0) | 7 (2.3; ±1.5) |
| Solely service hospital (7) | 5 (71.4) | 12 (2.4; ±0.5) | 2 (28.6) | 2 (1) |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 7 (87.5) | 38 (5.4; ±5.2) | 3 (37.5) | 3 (1) |
| Non accredited hospital (3) | 1 (33.3) | 1 (1) | 2 (66.7) | 6(3; ±1.4) |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 14 (14) | 0 | 0 |
| Type B (5) | 3 (60.0) | 22 (4.4; ±4.3) | 2 (40.0) | 2 (1) |
| Type C (3) | 1 (33.3) | 2 (2) | 2 (66.7) | 5 (2.5;±2.1) |
| Type D (2) | 1 (50.0) | 1 (1) | 1 (50.0) | 2 (2) |
| **Level of service delivery** | | | | |
| Secondary level (7) | 5 (71.4) | 10 (2; ± 0.7) | 2 (28.6) | 3 (1.5; ±0.7) |
| Tertiary level (4) | 3 (75.0) | 29 (9.7; ±5.9) | 3 (75.0) | 6 (2; ±1.7) |

**Table 56: Support human resources reported**

| Hospitals reporting specialized pediatric eye care services | Hospitals with computer operators N (%) | Number of computer operators; N; Mean (±SD) | Hospitals with quality assurance officers N (%) | Number of quality assurance officers: N; Mean (±SD) |
|---|---|---|---|---|
| Responding hospitals (11) | 3 (27.3) | 7 (2.3; 1.5) | 4 (36.4) | 15 (3.7; 3.6) |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 2 (28.6) | 5 (2.5; ±2.1) | 3 (42.9) | 14 (4.6; ±3.7) |
| Private (4) | 1 (25.0) | 2(2) | 1 (25.0) | 1 (1) |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 6 (3; ±1.4) | 2 (66.7) | 4 (2; ±1.4) |
| Ophthalmology department as part of multispecialty hospital (8) | 1 (12.5) | 1 (1) | 2 (25.0) | 11 (5.5; ±4.9) |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 2 (50.0) | 6 (3; ±1.4) | 3 (75.0) | 13 (4.3; ±4.1) |
| Solely service hospital (7) | 1 (14.3) | 1 (1) | 1 (14.3) | 2 (2) |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 1 (12.5) | 6 (3;±1.4) | 2 (25.0) | 11 (5.5; ±4.9) |
| Non accredited hospital (3) | 2 (66.7) | 1 | 2 (66.7) | 4 (2; ±1.4) |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | 0 | 1 (100.0) | 9 (9) |
| Type B (5) | 0 | 0 | 1 (20.0) | 2 (2) |
| Type C (3) | 2 (66.7) | 5 (2.5; ±2.1) | 1 (33.3) | 3 (3) |
| Type D (2) | 1 (50.0) | 2 (2) | 1 (50.0) | 1 (1) |
| **Level of service delivery** | | | | |
| Secondary level (7) | 2 (28.6) | 3 (1.5; ±1) | 2 (28.6) | 1 (1.5; ±0.7) |
| Tertiary level (4) | 1 (25.0) | 4 (4) | 2 (50.0) | 12 (6; ±4.2) |

**Table 57: Skill Development programs for Ophthalmologists**

| Parameter | Frequency | %; Mean (±SD) |
|---|---|---|
| No. of hospitals nominating ophthalmologists for training (11) | 5 | 45.5% |
| No. of ophthalmologists reported to have undergone training | 40 | 4.4 (±5.9) |
| Training received in strabismus | 10 | 25.0% |
| Training received in cataract | 7 | 17.5% |
| Training received in glaucoma | 4 | 10.0% |
| Trained in medical retina | 2 | 5.0% |
| Training in surgical retina | 1 | 2.5% |
| Other eye specialties | 5 | 12.5% |
| Other short courses attended | 2 | 5.0% |

**Table 58: Skill programs for optometrists/ ophthalmic assistants**

| Parameter | Frequency | %; Mean (±SD) |
|---|---|---|
| No. of hospitals nominating optometrists/ ophthalmic assistants for training (11) | 4 | 36.4% |
| No. of optometrists/ ophthalmic assistants reported to have undergone training | 11 | 2 (±1.4) |
| Training received in ROP screening | 11 | 100.0% |
| Training received in orthoptics | 3 | 27.3% |
| Training received in pediatric refraction | 1 | 9.1% |
| Other short courses attended | 11 | 100.0% |

**Table 59: Skill programs for nursing professionals**

| Parameter | Frequency | %; Mean (±SD) |
|---|---|---|
| No. of hospitals nominating nurses for training (11) | 6 | 54.5% |
| No. of nurses reported to have undergone training | 45 | 7.5(±11.1) |
| Training received in ROP screening | 11 | 24.4% |
| Training received in child care | 2 | 4.4% |
| Other short courses attended | 5 | 11.1% |

Overall, five hospitals reported training facilities being available for undergraduate medical training (MBBS) (Table 60). These five hospitals had a cumulative intake of 1661 with a mean intake of 332.2. Three hospitals reported offering ophthalmology residency programs where a cumulative number of 148 residency training programs were available annually. There were no ophthalmology residency programs being offered by private, solely service, type D or secondary level facilities.

## HOSPITAL STATISTICS

Five hospitals provided information on the patients registered in the outpatient clinics (Table 61). These hospitals reported 21,110 new paediatric registrations in 2018. The mean per hospital was 4222 and the registrations ranged from a minimum of 88 to a maximum of 19,615. Government, standalone, teaching, accredited and type C hospitals attracted more clientele compared to their peers. Gender analysis showed that there were more girls seen in the outpatient clinics compared to the boys.

Four hospitals provided data on age breakup of outpatient registrations (Table 62). There were significantly more under five outpatient consultations compared to those aged 6-10 or older. The mean number of outpatient registrations per hospitals decreased as age increased.

Only three hospitals provided information related to paediatric admissions in hospitals (Table 63). The mean number of admissions per hospital was 543.7 in 2018 with a range from 32 to 1567 cases. Though at outpatient level, there were more girls registered, at inpatient level, more boys compared to girls were admitted in 2018. The mean admissions per hospital was 300 for boys while it was 243.7 for girls. Highest number of admissions were in the government sector, multispecialty hospitals, accredited hospitals and Type B hospitals. Unfortunately, information was not available from Teaching or Tertiary level hospitals which may actually attract more patients. This is a data gap which needs to be addressed urgently in Sulawesi Selatan.

Most of the paediatric admissions were among those aged 0-5 years compared to those aged 6-11 years or older (Table 64). There were only 2 hospitals which provided information on those aged 6-11 and 12-18 years. Only 14 admissions were recorded among those aged ≥ 12 years compared to 1006 among those aged ≤ 5 years of age.

**Table 60: Undergraduate MBBS and Ophthalmology Residency programs reported**

| **Hospitals reporting specialized pediatric eye care services** | **Hospitals with undergraduate medical education program N (%)** | **Number of students trained annually (Mean; ±SD)** | **Hospitals ophthalmology residency programs N (%)** | **Number of residents trained annually (Mean; ±SD)** |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 5 (45.5) | 1661 (332.2; ±611.2) | 3 (27.3) | 148 (49.3; ±1.1) |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 4 (57.1) | 1613 (403.3; ± 681.6) | 3 (42.9) | 148 (49.3; ±1.2) |
| Private (4) | 1 (25.0) | 48 (48) | NA | 0 |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 82 (41; ±9.9) | 1 (33.3) | 48 (48) |
| Ophthalmology department as part of multispecialty hospital (8) | 3 (37.5) | 1579 (526.3; ±688.3) | 2 (25.0) | 100 (50) |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 4 (100.0) | 1571 (392.8; ±688.3) | 3 (75.0) | 148 (49.3; ±1.2) |
| Solely service hospital (7) | 1 (14.3) | 90 (90) | 0 | 0 |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 3 (37.5) | 1579 (526.3; ±778.4) | 2 (25.0) | 100 (50) |
| Non accredited hospital (3) | 2 (66.7) | 82 (41; ±9.9) | 1 (33.3) | 48 (48) |
| **Type of Hospital** | | | | |
| Type A (1) | 1 (100.0) | 64 (64) | 1 (100.0) | 50 (50) |
| Type B (5) | 2 (40.0) | 1515 (757.5; ±943.9) | 1 (20.0) | 50 (50) |
| Type C (3) | 1 (33.3) | 34 (34) | 1 (33.3) | 48 (48) |
| Type D (2) | 1 (50.0) | 48 (48) | 0 | |
| **Level of service delivery** | | | | |
| Secondary level (7) | 1 (14.3) | 48 (48) | 0 | 0 |
| Tertiary level (4) | 4 (100.0) | 1613 (403.3; ±681.6) | 3 (75.0) | 148 (49.3; ±1.2) |

**Table 61: New Paediatric Outpatient consultations in 2018 reported**

| | | Total new registered 2018 | | | Total Males registered in 2018 | | | Total Females registered 2018 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hospitals reporting specialized pediatric eye care services** | **Number of hospitals providing information N (%)** | **Total Registered** | **Mean (±SD)** | **Range** | **Total Registered** | **Mean (±SD)** | **Range** | **Total Registered** | **Mean (±SD)** | **Range** |
| Total number of responding hospitals (11) | 5 (45.5) | 21110 | 4222(8609) | 88-19615 | 9070 | 1922 (3866.7) | 51-8835 | 11,500 | 2300 (4742) | 37-10780 |
| **Ownership Status** | | | | | | | | | | |
| Government/ Army/Police/ Ministry (7) | 3 (42.9) | 2753 | 917 (±954.6) | 88-1961 | 9277 | 3092.3(±4976.2) | 51-8835 | 1428 | 476(±539.3) | 37-10780 |
| Private (4) | 2 (50.0) | 703 | 351.5 (±248.1) | 176-527 | 333 | 166.5(±96.8) | 98-235 | 370 | 185(±151.3) | 78-292 |
| **Administrative Status** | | | | | | | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 2753 | 1244(±1013.9) | 527-1961 | 9070 | 4535(±6081.1) | 235-8835 | 1370 | 685(±555.8) | 292-10780 |
| Ophthalmology department as part of multispecialty hospital (8) | 3 (37.5) | 968 | 322.6 (±333.1) | 88-704 | 540 | 180(±184.2) | 51-391 | 428 | 142.6(±148.9) | 37-313 |
| **Teaching Status** | | | | | | | | | | |
| Teaching Hospital (4) | 2 (50.0) | 2753 | 1244(±1013.9) | 527-1961 | 9070 | 4535(±6081.1) | 235-8835 | 1370 | 685(±555.8) | 292-10780 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Solely service hospital (7) | 3 (42.9) | 968 | 322.6 (±333.1) | 88 – 704 | 540 | 180(±184.2) | 51-391 | 428 | 142.6(±148.9) | 37-313 |
| **Accreditation Status** | | | | | | | | | | |
| Accredited Hospital (8) | 3 (37.5) | 2488 | 1244(±1013.9) | 527-1961 | 540 | 180(±184.2) | 51-391 | 428 | 142.6(±148.9) | 37-313 |
| Non accredited hospital (3) | 2 (66.7) | 968 | 322.6 (±333.1) | 88-704 | 9070 | 4535(±6081.1) | 235-8835 | 1370 | 658(±555.8) | 292-10780 |
| **Type of Hospital** | | | | | | | | | | |
| Type A (1) | 0 | | | | | | | | | |
| Type B (5) | 3 (60.0) | 968 | 322.6 ±333.1) | 88-704 | 540 | 180(±184.2) | 51-391 | 428 | 142.6(±148.9) | 37-313 |
| Type C (3) | 1 (33.3) | 1961 | 1961 | 1961 | 8835 | 8835 | 8835 | 10780 | 10780 | 10780 |
| Type D (2) | 1 (50.0) | 527 | 527 | 527 | 235 | 235 | 235 | 292 | 292 | 292 |
| **Level of service delivery** | | | | | | | | | | |
| Secondary level (7) | 4 (57.1) | 1495 | 373.7 (±290.5) | 88-704 | 775 | 193.7(±152.9) | 51-391 | 720 | 180(±142.6) | 37-313 |
| Tertiary level (4) | 1 (25.0) | 1961 | 1961 | 1961 | 8835 | 8835 | 8835 | 10780 | 10780 | 10780 |

| Table 62: Age distribution of new registrations at outpatient clinics in 2018 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total new registered 2018 (0-5 years) | | | Total new registered 2018 (6-10 years) | | | Total new registered 2018 (11-18 years) | | |
| **Hospitals reporting specialized pediatric eye care services** | **Number of hospitals providing information N (%)** | **Total Registered** | **Mean (±SD)** | **Range** | **Total Registered** | **Mean (±SD)** | **Range** | **Total** | **Mean (±SD)** | **Range** |
| Total number of responding hospitals (11) | 4 (36.4) | 809 | 202.2 (189.8) | 52-462 | 453 | 113.2(99.5) | 23-242 | 155 | 51.7(35.9) | 13-84 |
| **Ownership Status** | | | | | | | | | | |
| Government/ Army/Police/ Ministry (7) | 2 (28.6) | 514 | 257(289.9) | 52-462 | 265 | 132.5(154.9) | 23-242 | 13 | 13 | 13 |
| Private (4) | 2 (50.0) | 295 | 147.5(109.6) | 70-225 | 188 | 94(65.1) | 48-140 | 142 | 71(18.4) | 58-84 |
| **Administrative Status** | | | | | | | | | | |
| Standalone eye hospital (3) | 1 (33.3) | 225 | 225 | 225 | 140 | 140 | 140 | 84 | 84 | 84 |
| Ophthalmology department as part of multispecialty hospital (8) | 3 (37.5) | 584 | 194.6(231.2) | 52-462 | 313 | 104.3(119.9) | 23-242 | 71 | 35.5(31.8) | 13-58 |
| **Teaching Status** | | | | | | | | | | |
| Teaching Hospital (4) | 1 (25.0) | 225 | 225 | 225 | 140 | 140 | 140 | 84 | 84 | 84 |
| Solely service hospital (7) | 3 (42.9) | 584 | 194.6(231.6) | 52-462 | 313 | 104.3(119.9) | 23-242 | 71 | 35.5(31.8) | 13-58 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Accreditation Status** | | | | | | | | | | |
| Accredited Hospital (8) | 3 (37.5) | 584 | 194.6(231.6) | 52-462 | 313 | 104.3(119.9) | 23-242 | 84 | 84 | 84 |
| Non accredited hospital (3) | 1 (33.3) | 225 | 225 | 225 | 140 | 140 | 140 | 71 | 35.5(31.8) | 13-58 |
| **Type of Hospital** | | | | | | | | | | |
| Type A (1) | 0 | | | | | | | | | |
| Type B (5) | 3 (60.0) | 584 | 194.6(231.6) | 52-462 | 313 | 104.3(119.9) | 23-242 | 71 | 35.5(31.8) | 13-58 |
| Type C (3) | 0 | | | | | | | 84 | 84 | 84-84 |
| Type D (2) | 1 (50.0) | 225 | 225 | 225 | 140 | 140 | 140-140 | NA | | |
| **Level of service delivery** | | | | | | | | | | |
| Secondary level (7) | 4 (57.1) | 809 | 202.2(187.7) | 225 | 140 | 140 | 23-242 | 115 | 51.7(35.9) | 13-84 |
| Tertiary level (4) | 0 | NA | NA | 52-462 | 453 | 113.3(99.5) | NA | NA | NA | NA |

**Table 63: Reported paediatric hospitalizations in 2018**

| | | Total new pediatric hospitalizations 2018 | | | Total new hospitalizations 2018 (Males) | | | Total new hospitalizations 2018 (Female) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Responding Hospitals** | **Hospitals providing information N (%)** | **Admitted** | **Mean (±SD)** | **Range** | **Admitted** | **Mean (±SD)** | **Range** | **Admitted** | **Mean (±SD)** | **Range** |
| Total number of responding hospitals (11) | 3 (27.3) | 1599 | 543.7 (±886.2) | 32-1567 | 900 | 300 (±494.5) | 11-871 | 731 | 243.7 (±391.7) | 14-696 |
| **Ownership Status** | | | | | | | | | | |
| Government/ Army/Police/ Ministry (7) | 2 (28.6) | 1599 | 799.5 (±1085.4) | 32-1567 | 882 | 441 (±608.1) | 11-871 | 717 | 358.5 (±477.3) | 21-696 |
| Private (4) | 1 (25.0) | 32 | 32 | 32-32 | 18 | 18 | 18 | 14 | 14 | 14 |
| **Administrative Status** | | | | | | | | | | |
| Standalone eye hospital (3) | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Ophthalmology department as part of multispecialty hospital (8) | 3 (37.5) | 1631 | 543.7 (±886.2) | 32-1567 | 900 | 300 (±494.5) | 11-871 | 731 | 243.7 (±391.7) | 14-696 |
| **Teaching Status** | | | | | | | | | | |
| Teaching Hospital (4) | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Solely service hospital (7) | 3 (27.3) | 1631 | 543.7 (±886.2) | 32-1567 | 900 | 300 (±494.5) | 11-871 | 731 | 243.7 (±391.7) | 14-696 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Accreditation Status** | | | | | | | | | | |
| Accredited Hospital (8) | 3 (37.5) | 1631 | 543.7 (±886.2) | 32-1567 | 900 | 300 (±494.5) | 11-871 | 731 | 243.7 (±391.7) | 14-696 |
| Non accredited hospital (3) | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Type of Hospital** | | | | | | | | | | |
| Type A (1) | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Type B (5) | 3 (60.0) | 1631 | 543.7 (±886.2) | 32-1567 | 900 | 300 (±494.5) | 11-871 | 731 | 243.7 (±391.7) | 14-696 |
| Type C (3) | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Type D (2) | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Level of service delivery** | | | | | | | | | | |
| Secondary level (7) | 3 (27.3) | 1631 | 543.7 (±886.2) | 32-1567 | 900 | 300 (±494.5) | 11-871 | 731 | 243.7 (±391.7) | 14-696 |
| Tertiary level (4) | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 64: Age distribution of hospitalized paediatric cases**

| | Pediatric hospitalizations 2018 (0-5 years) (Respondents=3) | | | Pediatric hospitalizations 2018 (6-11 years) (Respondents=2) | | | Pediatric hospitalizations 2018 (11-18 years) (Respondents=2) | | |
|---|---|---|---|---|---|---|---|---|---|
| **Hospitals reporting specialized pediatric eye care services** | **Total admitted** | **Mean (±SD)** | **Range** | **Total admitted** | **Mean (±SD)** | **Range** | **Total admitted** | **Mean (±SD)** | **Range** |
| Total number of responding hospitals (11) | 1006 | 335.3 (±544.5) | 14-964 | 629 | 314.5 (±433.4) | 8-621 | 14 | 7 (±4.2) | 4-10 |
| **Ownership Status** | | | | | | | | | |
| Government/ Army/Police/ Ministry (7) | 992 | 496 (±661.9) | 28-964 | 621 | 621 | 621 | 4 | 4 | 4 |
| Private (4) | 14 | 14 | 14 | 8 | 8 | 8 | 10 | 10 | 10 |
| **Administrative Status** | | | | | | | | | |
| Standalone eye hospital (3) | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Ophthalmology department as part of multispecialty hospital (8) | 1006 | 335.3 (±544.5) | 14-964 | 629 | 314.5 (±433.5) | 8-621 | 14 | 7 (±4.2) | 4-10 |
| **Teaching Status** | | | | | | | | | |
| Teaching Hospital (4) | NA | NA | NA | NA | NA | NA | NA | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Solely service hospital (7) | 1006 | 335.3(±544.5) | 14-964 | 629 | 314.5 (±433.5) | 8-621 | 14 | 7 (±4.2) | 4-10 |
| **Accreditation Status** | | | | | | | | | |
| Accredited Hospital (8) | 1006 | 335.3(±544.5) | 14-964 | 629 | 314.5 (±433.5) | 8-621 | 14 | 7 (±4.2) | 4-10 |
| Non accredited hospital (3) | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Type of Hospital** | | | | | | | | | |
| Type A (1) | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Type B (5) | 1006 | 335.3(±544.5) | 14-964 | 629 | 314.5 (±433.5) | 8-621 | 14 | 7 (±4.2) | 4-10 |
| Type C (3) | BA | NA | NA | NA | NA | NA | NA | NA | NA |
| Type D (2) | | | | | | | | | |
| **Level of service delivery** | | | | | | | | | |
| Secondary level (7) | 1006 | 335.3(±544.5) | 14-964 | 629 | 314.5 (±433.5) | 8-621 | 14 | 7 (±4.2) | 4-10 |
| Tertiary level (4) | | | | NA | NA | NA | NA | NA | NA |

Adnexal disease was the commonest diagnosis reported in the outpatient consultations (Table 65). This was followed by refractive errors and paediatric cataract. Only one hospital reported vitamin A deficiency related corneal ulceration. The mix of diagnoses warrants a dedicated paediatric ophthalmology training to cover the needs of the population in Sulawesi Selatan. Looking at the data, a paediatric ophthalmology fellowship training program should impart diagnostic and therapeutic skills for managing a range of conditions affecting the anterior and posterior segments of the eye. Imparting multi domain skills for glaucoma, low vision, paediatric cataract, strabismus, corneal ulcers and ROP will help in developing a dedicated viable multi-skilled paediatric ophthalmologist.

Only 4 hospitals were able to provide data on paediatric surgery performed at these hospitals (Table 66). However, in 95.3% of operated cases the diagnosis recorded was 'other surgeries'. Efforts should be made to improve data capture at both the outpatient clinics as well as in the operation rooms as this will help in evidence-based planning of paediatric eye care services.

## EQUIPMENT INVENTORY

The equipment inventory assessed both the availability of equipment and the functional equipment. Functional equipment is equipment which is in working condition. For the analysis only functional equipment was highlighted as it shows the readiness of a particular hospital in providing meaningful paediatric eye care services. Most of the respondent hospitals reported that they had a good complement of basic diagnostic equipment (Table 67). Low vision assessment and management equipment was not routinely available and only one institution had these facilities. For a province of the size of Sulawesi Selatan , more low vision skills and equipment will be needed. Equipment for IOP measurement was available in most hospitals but functional equipment for measuring visual fields was not routinely available. For managing ROP at least a functional indirect ophthalmoscope is needed. However, all the 11 responding hospitals did not have a functional indirect ophthalmoscope. Only one Retcam was reported.

Only three hospitals reported an equipment maintenance contract (27.3%). The importance of a dynamic equipment maintenance system is borne out by the fact that 27.3% of the hospitals mentioned that the Operating Room had to be suspended indefinitely when a piece of equipment breaks down.

None of the hospitals had all basic functional equipment available (Table 68). Most had more than 50% of the basic equipment but not all. This needs to be improved upon.

**Table 65: Diagnoses recorded in outpatient clinics in 2018**

| Hospitals reporting specialized pediatric eye care services | No. responding hospitals | Frequency | Mean (±SD) | Range |
|---|---|---|---|---|
| Adnexal disease | 7 | 53,777 | 7682.4 (±20261.9) | 9- 53632 |
| Refractive Error | 8 | 6642 | 830.3 (±1121.4) | 20-3189 |
| Pediatric cataract | 6 | 1967 | 327.8 (±769.9) | 1-1899 |
| Other Conjunctivitis | 7 | 1947 | 278.1 (±592.2) | 7-1615 |
| Buphtalmos/ Pediatric Glaucoma | 6 | 941 | 156.8 (±356.3) | 2 - 884 |
| Other corneal ulcers | 7 | 389 | 55.6 (±81) | 1-174 |
| Other retinal diseases | 3 | 350 | 116.7 (±94.8) | 14-201 |
| Other whole globe disorders | 3 | 237 | 79 (±107) | 1-201 |
| Allergic Conjunctivitis | 7 | 283 | 40.2(±33) | 3-98 |
| Amblyopia | 7 | 192 | 27.4 (±20.2) | 3-52 |
| Vitamin A related corneal ulcer | 1 | 172 | - | - |
| Ocular trauma | 8 | 166 | 33.2 (±47.4) | 2-145 |
| Retinopathy of prematurity | 7 | 126 | 18(±15.4) | 2-41 |
| Strabismus | 7 | 85 | 12.1 (±11.5) | 1-31 |
| Keratoconus | 2 | 69 | 34.5 (±2.1) | 33-36 |
| Ptosis | 4 | 62 | 15.5 (±17) | 1-40 |
| Retinal dystrophies | 3 | 49 | 16.3 (±6.4) | 9-21 |
| Others | 3 | 10197 | 3399 (±5876.8) | 2 - 10185 |
| Undiagnosed | 1 | 2120 | 2120 | 2120 |

**Table 66: Distribution of reported paediatric surgeries in 2018**

| Hospitals reporting specialized pediatric eye care services | No. responding hospitals | Frequency | Mean (±SD) | Range |
|---|---|---|---|---|
| Chalazion | 4 | 90 | 22.5(±14.9) | 4-40 |
| Pediatric cataract surgery | 1 | 26 | - | - |
| Pediatric glaucoma / Buphthalmos | 1 | 26 | - | - |
| DCR | 1 | 14 | - | - |
| Examination Under Anesthesia | 3 | 14 | 4.7(±3) | 2-8 |
| Enucleation | 1 | 4 | - | - |
| Dermoid cyst | 1 | 4 | - | - |
| Others | 1 | 3634 | - | - |

**Table 67: Functional Equipment Available at the Responding hospitals**

| **Functional Equipment** | **No. reporting functional equipment in good condition (N=11)** | **%** | **No. reporting non-functional equipment in good condition (N=11)** | **%** |
|---|---|---|---|---|
| **Basic Diagnostic Equipment** | | | | |
| Slit lamp | 10 | 90.9 | 1 | 9.1 |
| Penlight torch | 9 | 81.8 | 2 | 18.2 |
| Direct Ophthalmoscope | 9 | 81.8 | 0 | |
| Loupe | 8 | 72.7 | 0 | |
| Measuring tape | 6 | 54.5 | 0 | |
| Portable Slit lamp | 4 | 36.4 | 0 | |
| **Pediatric refraction equipment** | | | | |
| Trial lens set | 10 | 90.9 | 1 | 9.1 |
| Child Trial Frame | 7 | 63.6 | 0 | |
| Jaeger Cards | 5 | 45.4 | 0 | |
| Teller/ Cardiff Cards | 1 | 9.1 | 0 | |
| Other Pediatric vision charts | 7 | 63.6 | 0 | |
| LogMAR visual acuity distance charts | 3 | 27.3 | 0 | |
| Near Vision testing charts | 4 | 36.4 | 0 | |
| Reading Charts available | 7 | 63.6 | 0 | |

| | | | | |
|---|---|---|---|---|
| Occluder for cover test | 6 | 54.5 | 0 | |
| Near fixation target | 3 | 27.3 | 0 | |
| Cross cylinder | 7 | 63.6 | 0 | |
| 14 plate Ishihara Test | 8 | 72.7 | 0 | |
| Other colour vision tests | 1 | 9.1 | 0 | |
| Ruler | 11 | 100 | 0 | |
| Retinoscope | 3 | 27.3 | 2 | 18.2 |
| Autorefractometer | 9 | 81.8 | 1 | 9.1 |
| Lensometer | 2 | 18.2 | 0 | |
| **Low Vision Equipment** | | | | |
| Low Vision Testing Kit | 1 | 9.1 | 0 | |
| Low Vision optical tools | 1 | 9.1 | 0 | |
| Magnifier | 1 | 9.1 | 1 | 9.1 |
| Contrast sensitivity | 2 | 18.2 | 0 | |
| **Glaucoma related equipment** | | | | |
| Schiotz tonometer | 8 | 72.7 | 0 | |
| Goldman/Automated Perimeter | 1 | 9.1 | 1 | 9.1 |
| Non Contact Tonometer | 5 | 45.4 | 0 | |
| Gonioscope | 3 | 27.3 | 0 | |
| I Care | 3 | 27.3 | 1 | 9.1 |

| | | | | |
|---|---|---|---|---|
| 28D Lens | 7 | 63.6 | 0 | |
| 78D lens | 5 | 45.4 | 0 | |
| 90D lens | 3 | 27.3 | 0 | |
| Child visual field testing | 0 | | 0 | |
| **Other functional equipment** | | | | |
| Indirect laser ophthalmoscope | 2 | 18.2 | 0 | |
| Indirect Ophthalmoscope | 8 | 72.7 | 0 | |
| Placido test (Keratoscope) | 1 | 9.1 | 0 | |
| Keratometry | 7 | 63.6 | 1 | 9.1 |
| Biometry / A-scan | 6 | 54.5 | 2 | 18.2 |
| B-scan/ Ultrasonography | 4 | 36.4 | 2 | 18.2 |
| Fundus camera | 2 | 18.2 | 0 | |
| Argon/Diode laser | 4 | 36.4 | 0 | |
| Retcam | 1 | 9.1 | 0 | |
| OCT | 2 | 18.2 | 0 | |
| Punctum dilator & Anel lacrimal test canula | 7 | 63.6 | 0 | |
| Verban scissors | 11 | 100.0 | 0 | |
| Tools Forceps | 11 | 100.0 | 0 | |
| Eyelid speculum/ retractor | 8 | 72.7 | 0 | |
| Hertel Exophthalmometer | 2 | 18.2 | 0 | |

| | | | | |
|---|---|---|---|---|
| Synaptophore | 2 | 18.2 | 0 | |
| Prism Bar/loose prism | 4 | 36.4 | 0 | |
| Kimura spatula | 1 | 9.1 | 0 | |
| Binocular Microscope | 9 | 81.8 | 0 | |
| Sterilizer | 11 | 100.0 | 0 | |
| Pediatric cryo probe | 1 | 9.1 | 0 | |
| Infant speculum | 9 | 81.8 | 0 | |
| Scleral indentation | 2 | 18.2 | 0 | |
| Routine availability fluorescein paper and dilating drops | 9 | 81.8 | 0 | |
| Object Glass | 4 | 36.4 | 0 | |
| **Availability of X-Ray/CT/MRI facilities** | 7 | 63.6 | 0 | |
| X-Ray facilities | 7 | 63.6 | 0 | |
| CT facilities | 6 | 54.5 | 0 | |
| MRI facilities | 2 | 18.2 | 0 | |
| **Anesthesia equipment** | | | | |
| Availability of Boyle's apparatus | 6 | 54.5 | 1 | 9.1 |
| Ambu Bag | 7 | 63.6 | 0 | |
| K-monitor and pulse oximeter | 10 | 90.9 | 0 | |
| Oxygen blender | 7 | 63.6 | 0 | |
| CPAP available | 5 | 45.4 | 0 | |

| | | | | |
|---|---|---|---|---|
| Incubator available | 6 | 54.5 | 0 | |
| Ventilator available | 7 | 63.6 | 0 | |
| Endotracheal tubes | 9 | 81.8 | 0 | |
| Baby warmer | 5 | 45.4 | 0 | |
| Syringe Pump | 7 | 63.6 | 0 | |
| Micro infusion pump | 7 | 63.6 | 0 | |
| **Equipment Maintenance** | | | | |
| Equipment Maintenance contract | 3 | 27.3 | NA | |
| Suspension of OT scheduling is indefinite if equipment breaks down | 3 | 27.3 | NA | |

Low Vision assessment and management equipment is scare as none of the responding hospitals had an adequate number of functional equipment (Table 69).

For glaucoma diagnosis, one hospital reported all functional equipment available at the hospital (Table 70). Most had more than 50% of the required complement of functional equipment.

Critical anaesthesia equipment was available with a larger number of hospitals compared to the other equipment (Table 71).

Efforts should be made to improve the availability and maintenance of equipment at the specialty hospitals in Sulawesi Selatan.

**Table 68: Basic outpatient diagnostic equipment availability**

| Parameter | All functional equipment available N (%) | ≥ 50% functional equipment available but not all N (%) | < 50% functional equipment available N(%) | Statistical Significance |
|---|---|---|---|---|
| Total number of responding hospitals (11) | | 6 (54.5) | 5 (45.5) | **Not significant** |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | | 5 (71.4) | 2 (28.6) | |
| Private (4) | | 1 (25.0) | 3 (75.0) | |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | | 2 (66.7) | 1 (33.3) | |
| Ophthalmology department as part of multispecialty hospital (8) | | 4 (50.0) | 4 (50.0) | |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | | 3 (75.0) | 1 (25.0) | |
| Solely service hospital (7) | | 3 (42.9) | 4 (57.1) | |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | | 4 (50.0) | 4 (50.0) | |
| Non accredited hospital (3) | | 2 (66.7) | 1 (33.3) | |
| **Type of Hospital** | | | | |
| Type A (1) | | | 1 (100) | |
| Type B (5) | | 3 (60.0) | 2 (40.0) | |
| Type C (3) | | 1 (33.3) | 2 (66.7) | |
| Type D (2) | | 1 (50.0) | 1 (50.0) | |
| **Level of service delivery** | | | | |
| Secondary level (7) | | 3 (42.9) | 4 (57.1) | |
| Tertiary level (4) | | 3 (75.0) | 1 (25.0) | |

**Table 69: Low Vision Functional Equipment available**

| Parameter | All functional equipment available N (%) | ≥ 50% functional equipment available but not all N (%) | < 50% functional equipment available N(%) | Statistical Significance |
|---|---|---|---|---|
| Total number of responding hospitals (11) | | 1 (9.1) | 10 (90.9) | **Not significant** |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | | 1 (14.3) | 2 (28.6) | |
| Private (4) | | 0 | 4 (100.0) | |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | | 0 | 3 (100.0) | |
| Ophthalmology department as part of multispecialty hospital (8) | | 1 (12.5) | 7 (87.5) | |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | | 1 (25.0) | 3 (75.0) | |
| Solely service hospital (7) | | 0 | 7 (100.0) | |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | | 1 (12.5) | 7 (87.5) | |
| Non accredited hospital (3) | | 0 | 3 (100.0) | |
| **Type of Hospital** | | | | |
| Type A (1) | | 0 | 1 (100.0) | |
| Type B (5) | | 1 (20.0) | 4 (80.0) | |
| Type C (3) | | 0 | 3 (100.0) | |
| Type D (2) | | 0 | 2 (100.0) | |
| **Level of service delivery** | | | | |
| Secondary level (7) | | 0 | 7 (100.0) | |
| Tertiary level (4) | | 1 (25.0) | 3 (75.0) | |

**Table 70: Functional Glaucoma diagnostic equipment availability**

| Parameter | All functional equipment available N (%) | ≥ 50% functional equipment available but not all N (%) | < 50% functional equipment available N(%) | Statistical Significance |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 1 (9.1) | 6 (54.5) | 4 (36.4) | **Not significant** |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 1 (14.3) | 4 (57.1) | 2 (28.6) | |
| Private (4) | 0 | 2 (50.0) | 2 (50.0) | |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 0 | 1 (33.3) | 2 (66.7) | |
| Ophthalmology department as part of multispecialty hospital (8) | 1 (12.5) | 5 (62.5) | 2 (25.0) | |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 0 | 3 (75.0) | 1 (25.0) | |
| Solely service hospital (7) | 1 (14.3) | 3 (42.9) | 3 (42.9) | |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 1 (12.5) | 5 (62.5) | 2 (25.0) | |
| Non accredited hospital (3) | 0 | 1 (33.3) | 2 (66.7) | |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | 1 (100.0) | 0 | |
| Type B (5) | 1 (20.0) | 4 (80.0) | 0 | |
| Type C (3) | 0 | 0 | 3 (100.0) | |
| Type D (2) | 0 | 1 (50.0) | 1 (50.0) | |
| **Level of service delivery** | | | | |
| Secondary level (7) | 1 (14.3) | 3 (42.9) | 3 (42.9) | |
| Tertiary level (4) | 0 | 3 (75.0) | 1 (25.0) | |

**Table 71: Critical functional Anaesthesia equipment availability**

| Parameter | All functional equipment available N (%) | ≥ 50% functional equipment available but not all N (%) | < 50% functional equipment available N(%) | Statistical Significance |
|---|---|---|---|---|
| Total number of responding hospitals (11) | 3 (27.3) | 5 (45.5) | 3 (27.3) | **None significant** |
| **Ownership Status** | | | | |
| Government/ Army/Police/ Ministry (7) | 2 (28.6) | 4 (57.1) | 1 (14.3) | |
| Private (4) | 1 (25.0) | 1 (25.0) | 2 (50.0) | |
| **Administrative Status** | | | | |
| Standalone eye hospital (3) | 2 (66.7) | 1 (33.3) | 0 | |
| Ophthalmology department as part of multispecialty hospital (8) | 1 (12.5) | 4 (50.0) | 3 (37.5) | |
| **Teaching Status** | | | | |
| Teaching Hospital (4) | 2 (50.0) | 2 (50.0) | 0 | |
| Solely service hospital (7) | 1 (14.3) | 3 (42.9) | 3 (42.9) | |
| **Accreditation Status** | | | | |
| Accredited Hospital (8) | 2 (25.0) | 4 (50.0) | 2 (25.0) | |
| Non accredited hospital (3) | 1 (33.3) | 1 (33.3) | 1 (33.3) | |
| **Type of Hospital** | | | | |
| Type A (1) | 0 | 1 (100) | 0 | |
| Type B (5) | 1 (20.0) | 2 (40.0) | 2 (40.0) | |
| Type C (3) | 1 (33.3) | 1 (33.3) | 1 (33.3) | |
| Type D (2) | 1 (50.0) | 1 (50.0) | 0 | |
| **Level of service delivery** | | | | |
| Secondary level (7) | 1 (14.3) | 3 (42.9) | 3 (42.9) | |
| Tertiary level (4) | 1 (25.0) | 2 (50.0) | 1 (25.0) | |

# DATA TRIANGULATION

Triangulation of data is critical for validity. Therefore, observational visits were made to a sample of hospitals to compare the data reported by the hospitals and to observe some of the practices being followed.

Overall there was good agreement between data provided by the hospitals and that examined during an observational visit (Table 72). On most parameters, the agreement of data from the two sources was more than 60%. Data was compared for 11 paediatric specialty eye hospitals and 56 general eye hospitals. There was poor agreement on two issues- Availability of dedicated beds for paediatric eye care and the use of protocols by doctors. However, the good agreement on most parameters shows that the data provided by the hospitals is of good quality.

Useful information was also collected on practices at the hospitals (Table 73). This information will be very helpful for evidence-based planning of paediatric eye care services in Sulawesi Selatan.

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**Table 72: Data Triangulation of Observational Visits to Paediatric Specialty Hospitals**

| **Parameter** | **Agreement** |
|---|---|
| Availability of paediatric eye care specialty unit | 77.8% |
| Availability of dedicated beds for paediatric cases | 44.4% |
| Availability of dedicated paediatric outpatient consultation room | 88.9% |
| Availability of operating rooms for paediatric eye surgery | 80.0% |
| Frequency of operating room availability | 60% |
| ROP screening performed in NICU attached to hospital | 66.7% |
| Modality of ROP screening | 100% |
| Availability of functional equipment | 91.0% |
| Availability of printed protocols for paediatric eye care | 87.5% |
| Printed protocols for doctors in ROP clinic | 62.0% |
| Printed protocols on ROP management in Operation Rooms | 75.0% |
| Protocols used regularly by doctors | 25.0% |
| Availability of printed information sheet for patients | 75.0% |

**Table 73: Observation of practices on visit to hospitals**

| Parameter | Observations | N |
|---|---|---|
| Visual acuity measured in an accurate manner | 45 | 18 (40.0%) |
| Mean time taken for paediatric consultation | 67 | 8.7 (±2.9) |
| Mean time for visual acuity measurement | 67 | 7.2 (±3.0) |
| Mean time taken for counselling | 67 | 8.8 min (±4.2) |
| Adequate condition of child consultation room | 67 | 19 (28.4%) |
| Poor condition of child consultation room | 67 | 25(37.3%) |
| Adequate condition of child examination room | 67 | 13 (19.4%) |
| Poor condition of child examination room | 67 | 7 (10.5%) |
| Good condition of visual acuity area | 67 | 13 (19.4%) |
| Poor condition of visual acuity area | 67 | 30 (44.8%) |
| Good condition of paediatric refraction area | 67 | 11 (16.4%) |
| Poor condition of paediatric refraction area | 67 | 31 (46.3%) |
| Good condition of child play area | 67 | 13 (19.4%) |
| Poor condition of child play area | 67 | 30 (44.8%) |

# SUGGESTED ACTION POINTS AND RECOMMENDATIONS

This study was the first ever assessment of the readiness of the Sulawesi Selatan to deal with the needs of children with eye care concerns. The situational analysis included all levels of care of the Indonesian health system from the primary to specialty service levels. It included in its gamut the infrastructure, human resources, skills and needs of the population.

The observations of this evaluation will help in identifying the strengths and gaps in realizing the goals of Vision2020 as childhood blindness and visual impairment is one of the priority areas in the Right to Sight initiative.

Planning and implementation of paediatric eye care services needs a scientifically valid evidence base, both in terms of the magnitude of eye concerns of children as well as the provider competencies and infrastructure to deliver these services.

Indonesia, including Sulawesi Selatan is a predominantly agrarian country and with a significant proportion of the population residing in the rural hinterland, there is a need to build a pyramidal child-responsive eye care system with different levels of competencies built in at different levels of service delivery. Therefore, the evaluation looked at all levels of care so as to provide information that can be relevant to building a strong and vibrant paediatric eye care system in Sulawesi Selatan.

At the primary level, a large number of nurses have been trained in eye care, especially for vision testing. Though refraction kits are available many nurses are not confident of their skills for the same, especially for paediatric refraction. Most primary care facilities had adequate space which can be effectively used for vision testing and refraction and identification of eye problems in children. This is an excellent resource which can be effectively utilized for identification, primary care management and timely referral with appropriate training and monitoring. This will be very useful for paediatric eye care as the nurses are already involved in school vision screening programs and have a close association with the community. The sustainability of a paediatric eye care service is dependent on the volume of referrals to higher facilities and this can be ensured by engaging the primary level staff in the referral process. Instead of covering the entire province in one go, it will be good to prioritize the districts like Luwu Timur which have better availability of functional equipment in the PHCs compared to districts which have a poor availability of functional

equipment. Even within districts mapping should be done primary care facility wise so that those with adequate functional equipment and human resources can be taken up first.

It was observed that most of the non-paediatric specialty eye hospitals were secondary level facilities. Most of these hospitals had in-patient facilities but only a miniscule proportion had dedicated eye beds. This is understandable as many of these hospitals are multi-specialty hospitals and the availability of beds dedicated for eye care would depend on the patient load. Administrators will give more weightage to those specialties which have a high demand for admissions. This is also a pragmatic way for them as most of the patients have an insurance cover which takes care of the costs entailed. It is also true that most of the adult eye surgeries today are day-case surgeries and therefore admission will not be required. However, most of the paediatric surgeries would require admissions and that is the dichotomy. Policy makers will need to be convinced that if at least 1-2 beds are dedicated to paediatric eye care, it will be possible to schedule more procedures on children. Of course, skilling will have to go hand-in-hand with such a policy decision.

At the secondary level facilities where eye care is being provided, it is essential to ramp up skills, equipment and infrastructure to cater to needs of paediatric patients. With a reported increasing magnitude of ROP in Indonesia and Sulawesi Selatan, there is a need to recruit and train neonatology teams in ROP and involve them in ROP screening. It may not be immediately possible that all these hospitals will be able to treat ROP but if they are able to screen for ROP it will be an excellent initiative.

Supportive logistics like patient tracking, counselling, data capture methods will also need to be addressed at this level.

District wise or population wise mapping of availability of skills and infrastructure will need to be undertaken so that at least 10% of the 58 hospitals can be upgraded to speciality paediatric centres over the next 3-5 years. The centres thus established should have an adequate geographical spread so that the needs of different regions of the province are covered.

In most hospitals age and sex disaggregated data and diagnosis-based data, especially in the surgical theatre was not routinely available. This could be either due to a lack of adequate data capture formats being available or a lack of appreciation of the importance of collecting this data. In most countries where insurance covers the cost, this data is readily available and accessible. Efforts should be made to address this gap both at the eye care and paediatric specialty eye care hospitals. Such data helps in prioritizing the optimum requirement of resources.

The eleven hospitals identified as providing specialty paediatric eye care were mostly public-funded and were geographically spread across the province. Though they were designated as specialty paediatric eye care facilities only a third had a dedicated paediatric eye care unit. This is a gap which needs to be addressed. Dedicated space for children's examination and for facilities like child-friendly spaces including feeding rooms were not available in two-thirds of these hospitals. All paediatric eye care hospitals and all those aspiring for such a specialty tag have to ensure that these facilities are available even before the rest of the needs are addressed.

At this level of care, sub-specialties like low vision care, strabismus care and ROP treatment have to be made available. At the moment there is a paucity of skills and equipment for these sub-specialties in almost all these hospitals excepting one. One cannot aspire to compete nationally or globally unless these aspects are addressed. There could be a graded system of specialty accreditation which could differentiate between full-fledged paediatric specialty hospitals and those which are paediatric eye care oriented hospitals. Based on a set of criteria that can be devised locally, the oriented hospitals can be scaled up into fully functional paediatric speciality eye hospitals over time.

Data capture is also inadequate as is tracking and follow up procedures for children being attended to at this level. In a world where there is rapid inflow of knowledge and new skills, continuing professional education and skill augmentation are critical. Consultants should be encouraged to enrol for such programs and they can be incentivised and awarded credit points which can be counted for professional pathway opportunities as there seemed to be little interest in such an approach.

Standard operating protocols (SOP) are critical for improving quality of care and should be readily available at all clinical stations. Unfortunately, this was not the observed practice and so needs to be urgently addressed.

The situational analysis was able to identify the strengths and gaps in delivering paediatric eye care and the evidence that has been generated should be used for policy formulation in the province and nationally. The analysis also observed that there is a great opportunity to augment paediatric eye care services in the province and make the province a model that can be emulated in other parts of the country.

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# ANNEXURES

# Annexure 1

**List of Hospitals Included**

| District | Name of Hospital |
|---|---|
| BANTAENG DISTRICT | RSUD ANWAR MAKKATUTU BANTAENG |
| BANTAENG DISTRICT | KLINIK UTAMA MITRA MEDIKA MANDIRI |
| BANTAENG DISTRICT | KLINIK DOI 79 |
| BARRU DISTRICT | RSUD BARRU |
| BONE DISTRICT | RSUD. TENRIAWARU BONE |
| BONE DISTRICT | RS. DR. M. YASIN |
| ENREKANG DISTRICT | RSUD MASSENREMPULU ENREKANG |
| GOWA DISTRICT | RSU. THALIA IRHAM |
| GOWA DISTRICT | RSUD SYEKH YUSUF GOWA |
| JENEPONTO DISTRICT | RSUD LANTO DG PASEWANG |
| KEPULAUAN SELAYAR DISTRICT | RSUD KH. HAYYUNG |
| LUWU DISTRICT | BATARA GURU |
| LUWU DISTRICT | RS HIKMAH SEJAHTERA |
| LUWU TIMUR DISTRICT | I LAGALIGO |
| LUWU UTARA DISTRICT | ANDI DJEMMA MASAMBA |
| MAROS DISTRICT | RS.DR DODY SARDJITO |
| MAROS DISTRICT | RSUD SALEWANGAN MAROS |
| MAKASSAR CITY | KLINIK AXIS |
| MAKASSAR CITY | RSU HIKMAH |
| MAKASSAR CITY | RSUD SAYANG RAKYAT |
| MAKASSAR CITY | KLINIK MAPALA MEDICAL CENTRE |
| MAKASSAR CITY | RSKD DADI PROVINSI SULAWESI SELATAN |
| MAKASSAR CITY | RS IBNU SINA |
| MAKASSAR CITY | RS AKADEMIS JAURY YUSUF PUTERA |
| MAKASSAR CITY | RS TINGKAT II PELAMONIA |
| MAKASSAR CITY | RSUD HAJI MAKASSAR |
| MAKASSAR CITY | RS UNIVERSITAS INDONESIA TIMUR |

| | |
|---|---|
| MAKASSAR CITY | RSU MITRA HUSADA |
| MAKASSAR CITY | MONGONSIDI EYE DAN SKIN CENTRE |
| MAKASSAR CITY | RS TNI AL JALA AMMARI |
| MAKASSAR CITY | RS DR TADJUDDIN CHALID |
| MAKASSAR CITY | KLINIK IBU DAN ANAK EFBIFOR |
| MAKASSAR CITY | KLINIK MATA INTAN |
| MAKASSAR CITY | RSUD LABUANG BAJI |
| MAKASSAR CITY | RSU LURAMAY |
| MAKASSAR CITY | KLINIK MATA SEDAYU |
| MAKASSAR CITY | VISION EYE CENTRE |
| MAKASSAR CITY | RS BHAYANGKARA |
| MAKASSAR CITY | RS STELLA MARIS |
| MAKASSAR CITY | RS FAISAL |
| MAKASSAR CITY | RSUD DAYA |
| MAKASSAR CITY | RSUD SILOAM |
| PANGKEP DISTRICT | RSUD PANGKEP |
| PARE PARE CITY | KLINIK FAJAR PARE PARE |
| PARE PARE CITY | RSU FATIMA |
| PINRANG DISTRICT | RS. AISYIYAH ST. KHADIJAH |
| PINRANG DISTRICT | RSU LASINRANG |
| SIDENRENG RAPPANG DISTRICT | RSU NENE MALLOMO |
| SIDENRENG RAPPANG DISTRICT | RSU. ARIFIN NU MANG |
| SINJAI DISTRICT | RSU. SINJAI |
| SOPPENG DISTRICT | RSUD LA TEMMAMALA |
| TAKALAR DISTRICT | RS. PADJONGA DG NGALLE TAKALAR |
| TANA TORAJA DISTRICT | LAKIPADADA |
| TANA TORAJA DISTRICT | KLINIK HARAPAN BUNDA |
| NORTH TORAJA DISTRICT | ELIM RANTEPAO |
| WAJO DISTRICT | RSUD. SIWA |
| WAJO DISTRICT | RSUD. LAMADDUKKELLENG |
| WAJO DISTRICT | KLINIK MATA MITRA |

**Annexure 2: List of Primary Health care facilities covered in each district**

| District | PHC |
|---|---|
| Bantaeng | Kota |
| | Ulugalung |
| | Lasepang |
| | Loka |
| | Kassi-Kassi |
| | Dampang |
| | Baruga |
| | Campagaloe |
| | Banyorang |
| | Bissappu |
| | Pa'bentengang |
| | Moti |
| | Sinoa |
| Barru | Padongko |
| | Pancana |
| | Mangkoso |
| | Bojo Baru |
| | Palakka |
| | Ralla |
| | Pujananting |
| | Lisu |
| | Doi-Doi |
| | Pekkae |
| | Madello |
| | Polanro |
| Bone | Mare |
| | Gaya Baru |
| | Palakka |
| | Kading |
| | Timurung |
| | Cenrana |

| | |
|---|---|
| | Tellu Siatinge |
| | Tunreng Tellue |
| | Libureng |
| | Paccing |
| | Bontocani |
| | Biru |
| | Tonra |
| | Usa |
| | Patimpeng |
| | Lonrong |
| | Ulaweng |
| | Bajoe |
| | Palakka Kahu |
| | Cina |
| | Lamuru |
| | Watampone |
| | Taretta |
| | Lamurukung |
| | Barebbo |
| | Kahu |
| | Salomekko |
| | Pattiro Mampu |
| | Koppe |
| | Ajangale |
| | Sibulue |
| | Sumaling |
| | Kajuara |
| | Dua Boccoe |
| | Awaru |
| | Ponre |
| | Tanabatue |
| | Lappariaja |
| Bulukumba | Palangisang |

| | |
|---|---|
| | Karassing |
| | Borong Rappoa |
| | Caile |
| | Ujung Loe |
| | Bonto Bahari |
| | Bontobangun |
| | Bontonyeleng |
| | Tanete |
| | Gattareng |
| | Manyampa |
| | Herlang |
| | Batang |
| | Ponre |
| | Salassae |
| Enrekang | Malua |
| | Kalosi |
| | Buntu Batu |
| | Kota |
| | Sudu |
| | Masalle |
| | Kotu |
| | Kabere |
| | Bungin |
| | Maiwa |
| | Anggeraja |
| | Sumbang |
| | Baroko |
| | Baroko |
| Gowa | Bontolempangan II |
| | Gentungan |
| | Tonrorita |
| | Kampili |
| | Lauwa |

| | |
|---|---|
| | Tompobulu |
| | Bontonompo I |
| | Manuju |
| | Kampili |
| | Pallangga |
| | Monco Balang |
| | Parigi |
| | Parangloe |
| | Sapaya |
| | Samata |
| | Kanjilo |
| | Bajeng |
| | Bontonompo II |
| | Bontomarannu |
| | Pattallassang |
| | Somba Opu |
| | Batumalonro |
| | Tinggimoncong |
| | Bontolempangan |
| | Pabbentengang |
| | Paccelekang |
| | Tamaona |
| Jeneponto | Binamu Kota |
| | Bulu Sibattang |
| | Barana |
| | Buludoang |
| | Bontoramba |
| | Bululoe |
| | Togo-Togo |
| | Tompobulu |
| | Arungkeke |
| | Kapita |
| | Binamu |

| | |
|---|---|
| | Bontomate'ne |
| | Bontosunggu Kota |
| | Rumbia |
| | Tarowang |
| | Bangkala |
| | Tamalatea |
| | Tino |
| | Tolo |
| | Polebungin |
| Kepulaun Selayar | Ujung Jampea |
| | Bontosunggu |
| | Bontosikuyu |
| | Lowa |
| | Buki |
| | Bontomatene |
| | Barugaia |
| | Benteng Jampea |
| | Pasimarannu |
| | Benteng |
| | Parangia |
| | Pasitallu |
| Luwu | Latimojong |
| | Walenrang Barat |
| | Walenrang Utara |
| | Sangtempe Utara (Basse) |
| | Bajo |
| | Bua |
| | Kamanre |
| | Larompong Selatan |
| | Lamasi |
| | Ponrang |
| | Bajo Barat |
| | Belopa |

| | |
|---|---|
| | Walenrang Timur |
| | Noling |
| | Belopa Utara |
| | Suli Barat |
| Luwu Timur | Bantilang |
| | Malili |
| | Kalaena |
| | Mahalona |
| | Lakawali |
| | Wasuponda |
| | Burau |
| | Wotu |
| | Tomoni Timur |
| | Parumpanai |
| | Wawondula |
| | Lampia |
| | Angkona |
| | Tomoni |
| | Timampu |
| | Nuha |
| | Mangkutana |
| Luwu Utara | Malangke Barat |
| | Rampi |
| | Tana Lili |
| | Sabbang |
| | Bone-Bone |
| | Cendana Putih |
| | Sabbang |
| | Seko |
| | Limbong |
| Makassar | Kapasa |
| | Bulurokeng |
| | Layang |

| | |
|---|---|
| | Pattingalloang |
| | Cendrawasih |
| | Andalas |
| | Kassi-Kassi |
| | Tamalanrea |
| | Ballaparang |
| | Maccini Sombala |
| | Antara |
| | Tamamaung |
| | Tamalate |
| | Paccerakkang |
| | Bara-Baraya |
| | Barang Lompo |
| | Rappokalling |
| | Barombong |
| | Pertiwi |
| | Mamajang |
| | Sudiang |
| | Karuwisi |
| | Maccini Sawah |
| | Kaluku Bodoa |
| | Bira |
| | Toddopuli |
| | Minasa Upa |
| | Kodingareng |
| | Maradekaya |
| | Tabaringan |
| | Makkasau |
| | Sudiang Raya |
| | Panambungan |
| | Bangkala |
| | Batua |
| | Antang |

| | |
|---|---|
| | Jumpandang Baru |
| | Mangasa |
| | Dahlia |
| | Antang Perumnas |
| | Pampang |
| | Jongaya |
| | Tamalanrea Jaya |
| | Dahlia |
| | Antang Perumnas |
| | Malimongan Baru |
| | Tamangapa |
| | Tarakang |
| Maros | Turikale |
| | Maros Baru |
| | Simbang |
| | Marussu |
| | Moncongloe |
| | Tompobulu |
| | Bantimurung |
| | Camba |
| | Cenrana |
| | Mandai |
| | Mallawa |
| Palopo | Wara Selatan |
| | Wara Utara |
| | Pontap |
| | Suli |
| | Wara |
| | Padang Lambe |
| | Sendana |
| | Maroangin |
| | Benteng |
| | Bara Permai |

| | |
|---|---|
| | Mungkajang |
| | Wara Utara Kota |
| | Wara Barat |
| Pangkajene dan Kepulauan | Kalabbirang |
| | Sailus |
| | Sarappo |
| | Bonto Perak |
| | Liukang Tupabbiring |
| | Sabutung |
| | Padang Lampe |
| | Segeri |
| | Bungoro |
| | Pundata Baji |
| | Mandalle |
| | Labakkang |
| | Kota Pangkajene |
| | Bowong Cindea |
| | Baring |
| | Bantimala |
| | Balocci |
| | Taraweang |
| | Pammantauang |
| | Liukang Kalmas |
| Pare Pare | Cempae |
| | Lumpue |
| | Lapadde |
| | Madising Na Mario |
| | Lakessi |
| | Lompoe |
| Pinrang | Lanrisang |
| | Sulili |
| | Salo |
| | Mattiro Bulu |

| | |
|---|---|
| | Suppa |
| | Tadang Palie |
| | Teppo |
| | Ujunglero |
| | Lampa |
| | Mattirodeceng |
| | Batulappa |
| | Cempa |
| | Tuppu |
| | Bungi |
| | Salimbongan |
| | Mattombong |
| Sidenreng Rappang | Lawawoi |
| | Barukku |
| | Biloka |
| | Dongi |
| | Amparita |
| | Baranti |
| | Pangkajene |
| | Belawae |
| | Tanru Tedong |
| | Rappang |
| | Kulo |
| | Empagae |
| | Lancirang |
| | Manisa |
| Sinjai | Aska |
| | Biji Nangka |
| | Borong Kompleks |
| | Manimpahoi |
| | Pulau Sembilan |
| | Samaenre |
| | Mannanti |

| | |
|---|---|
| | Lappadata |
| | Bulupoddo |
| | Balangnipa |
| | Manipi |
| | Kampala |
| | Lappae |
| | Samataring |
| | Tengngalembang |
| | Panaikang |
| Soppeng | Batu-Batu |
| | Panincong |
| | Ganra |
| | Tajuncu |
| | Citta |
| | Takalala |
| | Cakkarudi |
| | Malaka |
| | Pacongkang |
| | Goarie |
| | Cabenge |
| | Baringeng |
| | Tanjonge |
| | Leworeng |
| | Sewo |
| | Cangadi |
| | Salotungo |
| Takalar | Polombangkeng Selatan |
| | Polombangkeng Utara |
| | Pattallassang |
| | Bontokassi |
| | Aeng Towa |
| | Sanrobone |
| | Pattopakang |

| | |
|---|---|
| | Mappakasunggu |
| | Bontomarannu |
| | Galesong Utara |
| | Mangarabombang |
| | Towata |
| | Galesong |
| | Ko'mara |
| Tana Toraja | Makale Utara |
| | Batusura |
| | Getengan |
| | Kondoran |
| | Ulusalu |
| | Kondodewata |
| | Buakayu |
| | Buntu |
| | Tumbang Datu |
| | Rano |
| | Madandan |
| | Rembon |
| | Lekke |
| | Kurra |
| | Ranteallang |
| | Sandabilik |
| Toraja Utara | Bokin |
| | Kapalapitu |
| | Balusu |
| | Tondon |
| | Tallung Lipu |
| | Kepe |
| | Bangkelekila |
| | Laang Tanduk |
| | Pasang |
| | Lempo |

| | |
|---|---|
| | Tombang Kalua |
| | Tikala |
| | Sopai |
| | Rante Pangli |
| | Ma'dong |
| | Ta'ba |
| | Sa'dan Malimbong |
| | Rantebua |
| | Awan |
| | Bua Tallu Lolo |
| Wajo | Liu |
| | Takkalalla |
| | Tempe |
| | Tosora |
| | Pattirosompe |
| | Maniangpajo |
| | Tanasitolo |
| | Solo |
| | Pitumpanua |
| | Sappa |
| | Sajoanging |
| | Belawa |
| | Lempa |
| | Majauleng |
| | Parigi |
| | Pammana |
| | Sabbangparu |
| | Penrang |
| | Salewangeng |
| | Wewangrewu |
| | Salobulo |
| | Gilireng |
| | Keera |

## Annexure -3: Primary Care Data Collection Format

| S.No. | A. Hospital information | Code | Comments |
|---|---|---|---|
| **A01** | Hospital Name | Input to the column in the right | |
| **A02** | Health care facility code | 8 digit code | |
| **A03** | Address | Input to the column in the right | |
| **A04** | Village | Input to the column in the right | |
| **A05** | District | Input district name | |
| **A06** | Contact person | Input to the column in the right | |
| **A07** | Phone Number | Input to the column in the right | |
| **A08** | Email address of the contact person | Input to the column in the right | |
| **A09** | Person to be interviewed | Head of Center= 1; Others = 2 (Specify) _____ | |
| **A10** | Interview date | Date;months;year | |
| **A11** | Central sector | Government=1;Others=2 | |
| **A12** | Year of Eye ServiceStarted | Input the starting year | |
| | | | |
| **B** | **Infrastructure** | | |
| **B01** | Is there a space to running an eye care facility now? | Yes=1; No=2 | |

| | | | |
|---|---|---|---|
| **B02** | If yes, how is the status? | Is room for visual acuity check adequate? (Yes=1; No=2); Is electricity or a functional generator available? (Yes=1; No=2); Is the lightening adequate? (Yes=1; No=2); Is basic medication/eyedrops available? (Yes=1; No=2);All 4 criterias Yes**= Good; 2 criterias Yes= possible with input; None or 1 criteria Yes=Not adequate =3; Only fill the final code in the box** | **CODES: All 4- GOOD=1; 2+: Has POTENTIAL=2; <2= POOR/INADEQUATE=3** |
| | | | |
| **C** | **Equipments** | | |
| **C01** | Is penlight available | Yes=1; No=2 | |
| **C02** | Amount available | Specify number | |
| **C03** | How many is in good condition and Usable? | Specify number | |
| **C04** | Ruler availability? | Yes=1; No=2 | |
| **C05** | Amount available | Specify number | |
| **C06** | How many is in good condition and Usable? | Specify number | |
| **C07** | Snellen chart / visual acuity chart (visual acuity measurement tools?) | Yes=1; No=2 | |
| **C08** | Amount available | Specify number | |
| **C09** | How many is in good condition and Usable? | Specify number | |

| | | | |
|---|---|---|---|
| **C10** | Trial lens set availability? | Yes=1; No=2 | |
| **C11** | Amount available | Specify number | |
| **C12** | How many is in good condition and Usable? | Specify number | |
| **C13** | Loupe availability? | Yes=1; No=2 | |
| **C14** | Amount available | Specify number | |
| **C15** | How many is in good condition and Usable? | Specify number | |
| **C16** | schiotz tonometry availability? | Yes=1; No=2 | |
| **C17** | Amount available | Specify number | |
| **C18** | How many is in good condition and Usable? | Specify number | |
| **C19** | Is ishihara book available? | Yes=1; No=2 | |
| **C20** | Amount available | Specify number | |
| **C21** | How many is in good condition and Usable? | Specify number | |
| **D** | **Human resources** | | |
| **D01** | General practicioner | Specify number | |
| **D02** | General practicioner with employment status 1 | How many civil servant (Specify number, write 00 if none) | |
| **D03** | General practicioner with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | |
| **D04** | Medical staff for special sense | Specify number | |
| **D05** | Medical staff for special sense with employment status 1 | How many civil servant (Specify number, write 00 if none) | |

| | | | |
|---|---|---|---|
| **D06** | Medical staff for special sense with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | |
| **D07** | Nurse | Specify number | |
| **D08** | Nurse with employment status 1 | How many civil servant (Specify number, write 00 if none) | |
| **D09** | Nurse with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | |
| **D10** | How many nurses have attended training in ophtalmology? | (Specify number,write 00 if none) | |
| **D11** | Is there any general practitioner who have joined a pediatric eye health training? | Yes=1; No=2 | |
| | | | |
| **D12** | **Researcher comments** | | |
| | | | |
| | | | |
| | | | |
| **D13** | Researcher who fill edin the questionnaire | | |
| **D14** | Team number (1;2;3;4) | | |

## Annexure 4: General Hospital Questionnaire

| S.No. | Hospital Information | Code |
|---|---|---|
| **A01** | Name of Hospital | Input to the column in the right |
| **A02** | Health facility code | 8 digit code |
| **A03** | Address | Input to the column in the right |
| **A04** | City | Input to the column in the right |
| **A05** | District | Input district name |
| **A06** | Contact Phone Number | Input to the column in the right |
| **A07** | Website | Input to the column in the right |
| **A08** | Contact person | Input to the column in the right |
| **A09** | Email address of the contact person | Input to the column in the right |
| **A10** | Person to be interviewed | Hospital director=1; Head of Ophthalmology Department=2; Head of Pediatric Eye Center service =3; Others: 4 (Detail) _____ |
| **A11** | Interview date | Date;Month;Year |
| **A12** | Hospital/ clinic sector | Government=1; Private=2 |
| **A13** | Ownership of Hospital / Eye Clinic | Indonesian Army/Indonesian National Police/Indonesian state owned enterprices/ Other ministary=1; Private for Provit= 2 |
| **A14** | Year of Eye Service Started | Input the starting year |
| **A15** | Type of Hospita/clinic | Standalone Eye hospital=1; Ophthalmology Department as part of Multi specialists hospital=2. |
| **A16** | Hospital education status | Teaching Hospital=1; Solely Services hospital=2. |

| | | |
|---|---|---|
| **A17** | Hospital accreditation status | Accredited=1; Not accredited=2 (If Accredited go to A18) |
| **A18** | when was the last accreditation done? | Input actual year |
| **A19** | Status of Hospital | Type A=1; Type B=2; Type C=3; Type D=4 |
| **A20** | Hospital service level | Secondary=1; Tertiary=2 |
| | | |
| **B** | **Hospital Infrastructure** | |
| **B01** | How many bed are available in the hospital? | Input number (If no specific alocation input 00) |
| **B02** | Is there any bed allocation for eye patients? | Yes=1; No=2 |
| **B03** | If yes, how many bed are allocated for eye patients? | Input number (If no specific alocation input 00) |
| **B04** | Amount of bed for patients with The Indonesian National Health Insurance System (BPJS) ? | Input number (If no specific alocation input 00) |
| **B05** | Amount of bed for Direct Payment/private insurance patients? | Input number (If no specific alocation input 00) |
| **B06** | Payment method type | Government insurance=1; Private insurance=2; Payment from government=3; Direct payment=4 (can be chosen more than 1) |
| **B07** | Is Optical Dispensing unit available in the hospital? | Yes=1; No=2 |
| **B08** | Is contact-lens unit available in the hospital? | Yes=1; No=2 |
| **B09** | Is there 24/7 eye emergency service available? | Yes=1; No=2 |
| **B10** | how many operating rooms are available for ey surgeries in the hospital? | Input number (If no specific alocation input 00) |

| | | |
|---|---|---|
| **B11** | On average how many tables are there in each operating room use for eye surgeries ? | Input number (If no specific alocation input 00) |
| **B12** | How many days a week are scheduled for eye surgery? | Every day=1; 2-3 times weekly; once a week = 3; Based on clinical burden=4; Other (Specify)=5. _____ |
| **B13** | How is the medical record maintenance in the outpatient clinic? | Paper=1; Electronic Medical Record =2; Both=3. |
| **B14** | How is the medical record maintenance in the operating theatre? | Paper=1; Electronic Medical Record =2; Both=3. |
| **B15** | Is every patients were given a copy of consultation, examination result, and therapy to bring home? | Yes=1; No=2 |
| **B16** | If the patients pay for the services, what kind of payment modalities is used? | Policlinic consultation=1; Additional examination=2; Surgery procedure=3; All procedure are paid =4; Insurance pay all the costs=5; Government pay for the poor/civil servant=6 (can be choosen more than 1) |
| **B17** | Does the hospital have a system for tracking patients who need follow-up? | Yes=1; No=2 |
| **B18** | How tracking is done? | Telephone=1; Email=2; Message=3;Others(rspecify) =4 _____ |
| **B19** | Does the hospital has with NICU? | Yes=1; No=2 |
| **B20** | if yes, is the hospital have neonatologist? | Yes=1; No=2 |
| **B21** | If yes, is the hospital have trained nurse? | Yes=1; No=2 |
| | | |
| **C** | **Equipment inventory** | |
| **C01** | Slitlamp availability? | Yes=1; No=2 |
| **C02** | Amount available | Specify number |
| **C03** | How many is in good condition and usable? | Specify number |

| | | |
|---|---|---|
| **C04** | Trial lens set availability? | Yes=1; No=2 |
| **C05** | Amount available | Specify number |
| **CO6** | How many is in good condition and usable? | Specify number |
| **C07** | Child trial frame availability? | Yes=1; No=2 |
| **C08** | Amount available | Specify number |
| **C09** | How many is in good condition and usable? | Specify number |
| **C10** | Pediatric availability (pediatric visual chart)? If yes, specify _____ | Yes=1; No=2 |
| **C11** | Amount available | Specify number |
| **C12** | How many is in good condition and usable? | Specify number |
| **C13** | Occluder for cover test availability? | Yes=1; No=2 |
| **C14** | Amount available | Specify number |
| **C15** | How many is in good condition and usable? | Specify number |
| **C16** | Near fixation target availability? | Yes=1; No=2 |
| **C17** | Amount available | Specify number |
| **C18** | How many is in good condition and usable? | Specify number |
| **C19** | 14 plate Ishihara test availability? | Yes=1; No=2 |
| **C20** | Amount available | Specify number |
| **C21** | How many is in good condition and usable? | Specify number |

| | | |
|---|---|---|
| **C22** | Penlight availability? | Yes=1; No=2 |
| **C23** | Amount available | Specify number |
| **C24** | How many is in good condition and usable? | Specify number |
| **C25** | Ruler availability? | Yes=1; No=2 |
| **C26** | Amount available | Specify number |
| **C27** | How many is in good condition and usable? | Specify number |
| **C28** | Retinoscope availability? | Yes=1; No=2 |
| **C29** | Amount available | Specify number |
| **C30** | How many is in good condition and usable? | Specify number |
| **C31** | Autorefractometer availability | Yes=1; No=2 |
| **C32** | Amount available | Specify number |
| **C33** | How many is in good condition and usable? | Specify number |
| **C34** | Lensometer availability? | Yes=1; No=2 |
| **C35** | Amount available | Specify number |
| **C36** | How many is in good condition and usable? | Specify number |
| **C37** | Loupe availability? | Yes=1; No=2 |
| **C38** | Amount available | Specify number |
| **C39** | How many is in good condition and usable? | Specify number |
| **C40** | Schiotz tonometer availability? | Yes=1; No=2 |

| | | |
|---|---|---|
| **C41** | Amount available | Specify number |
| **C42** | How many is in good condition and usable? | Specify number |
| **C43** | Goldmann/automatic perimetry availability? | Yes=1; No=2 |
| **C44** | Amount available | Specify number |
| **C45** | How many is in good condition and usable? | Specify number |
| **C46** | Non-contact tonometry availability? | Yes=1; No=2 |
| **C47** | Amount available | Specify number |
| **C48** | How many is in good condition and usable? | Specify number |
| **C49** | Gonioscopy availability? | Yes=1; No=2 |
| **C50** | Amount available | Specify number |
| **C51** | How many is in good condition and usable? | Specify number |
| **C52** | Direct Ophthalmoscope availability? | Yes=1; No=2 |
| **C53** | Amount available | Specify number |
| **C54** | How many is in good condition and usable? | Specify number |
| **C55** | Indirect Ophthalmoscope availability? | Yes=1; No=2 |
| **C56** | Amount available | Specify number |
| **C57** | How many is in good condition and usable? | Specify number |
| **C58** | 28D lens availability? | Yes=1; No=2 |
| **C59** | Amount available | Specify number |

| | | |
|---|---|---|
| **C60** | How many is in good condition and usable? | Specify number |
| **C61** | 78D lens availability? | Yes=1; No=2 |
| **C62** | Amount available | Specify number |
| **C63** | How many is in good condition and usable? | Specify number |
| **C64** | 90D lens availability? | Yes=1; No=2 |
| **C65** | Amount available | Specify number |
| **C66** | How many is in good condition and usable? | Specify number |
| **C67** | Indirect Laser Ophthalmoscope availability? | Yes=1; No=2 |
| **C68** | Amount available | Specify number |
| **C69** | How many is in good condition and usable? | Specify number |
| **C70** | Placido test (Keratoscope) availability? | Yes=1; No=2 |
| **C71** | Amount available | Specify number |
| **C72** | How many is in good condition and usable? | Specify number |
| **C73** | Biometri/A-scan availability? | Yes=1; No=2 |
| **C74** | Amount available | Specify number |
| **C75** | How many is in good condition and usable? | Specify number |
| **C76** | B-Scan ultrasonography availability? | Yes=1; No=2 |
| **C77** | Amount available | Specify number |
| **C78** | How many is in good condition and usable? | Specify number |

| | | |
|---|---|---|
| **C79** | Is fundus camera available? | Yes=1; No=2 |
| **C80** | Amount available | Specify number |
| **C81** | How many is in good condition and usable? | Specify number |
| **C82** | Is Argon/diode laser available? | Yes=1; No=2 |
| **C83** | Amount available | Specify number |
| **C84** | How many is in good condition and usable? | Specify number |
| **C85** | Is OCT available? | Yes=1; No=2 |
| **C86** | Amount available | Specify number |
| **C87** | How many is in good condition and usable? | Specify number |
| **C88** | Is Punctum dilator & Anel test canule available? | Yes=1; No=2 |
| **C89** | Amount available | Specify number |
| **C90** | How many is in good condition and usable? | Specify number |
| **C91** | Is verban scissors available? | Yes=1; No=2 |
| **C92** | Amount available | Specify number |
| **C93** | How many is in good condition and usable? | Specify number |
| **C94** | Is tools forceps available? | Yes=1; No=2 |
| **C95** | Amount available | Specify number |
| **C96** | How many is in good condition and usable? | Specify number |
| **C97** | Is eyelid speculum/retractor available? | Yes=1; No=2 |

| | | |
|---|---|---|
| **C98** | Amount available | Specify number |
| **C99** | How many is in good condition and usable? | Specify number |
| **C100** | Eksophthalmometer Hertel availability? | Yes=1; No=2 |
| **C101** | Amount available | Specify number |
| **C102** | How many is in good condition and usable? | Specify number |
| **C103** | Bar prisma/loose prism availability? | Yes=1; No=2 |
| **C104** | Amount available | Specify number |
| **C105** | How many is in good condition and usable? | Specify number |
| **C106** | Kimura spatula availability? | Yes=1; No=2 |
| **C107** | Amount available | Specify number |
| **C108** | How many is in good condition and usable? | Specify number |
| **C109** | Is fluorescein paper/drops routinely available? | Yes=1; No=2 |
| **C110** | Is object glass and cover glass routinely available? | Yes=1; No=2 |
| **C111** | Is CT/MRI/Radiology facilities available in the hospital? | Yes=1; No=2 |
| **C112** | Type of imaging system available in the hospital? | X-Ray=1; CT=2; MRI=3; None=4 (Can be chosen more than 1) |
| | **Anesthesia Equipment** | |
| **C113** | Is Boyles apparatus available ? | Yes=1; No=2 |
| **C114** | Amount available | Specify number |

| | | |
|---|---|---|
| **C115** | How many is in good condition and usable? | Specify number |
| **C116** | Is Ambu Bag available ? | Yes=1; No=2 |
| **C117** | Amount available | Specify number |
| **C118** | How many is in good condition and usable? | Specify number |
| **C119** | Is binocular microscope available ? | Yes=1; No=2 |
| **C120** | Amount available | Specify number |
| **C121** | How many is in good condition and usable? | Specify number |
| **C122** | Is sterilisator available in the eye/general operating theatre? | Yes=1; No=2 |
| **C123** | Amount available | Specify number |
| **C124** | How many is in good condition and usable? | Specify number |
| | | |
| **D** | **Protocol /Standard Operating Procedures** | |
| **D01** | Is there any printed protocole routinely used by the doctors ? | Yes, always=1; Yes,sometimes=2; No=3; Not applicable as not available=4 |
| **D02** | Is there a consultation pathway from pediatrician/neonatologist to ophthalmologist in general hospital than to pediatric eye specialist in the Pediatric eye hospital (for ROP cases)? | Yes=1; No=2 |
| | | |
| **E** | **Human Resources** | |
| **E01** | **Outpatient clinics** | neet to include in heading in forntend. |

| | | |
|---|---|---|
| **E02** | General practicioner | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E03** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |
| **E04** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E05** | Ophthalmologist | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E06** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |
| **E07** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E08** | Optometrists/Ophthalmic Assistants/ Orthoptists | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E09** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |
| **E10** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E11** | Ophthalmology nurse | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E12** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |
| **E13** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E14** | Anesthesiologist | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E15** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |

| | | |
|---|---|---|
| **E16** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E17** | Councelor in ophthalmology department | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E18** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |
| **E19** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E20** | Computer operator/medical record in Ophthalmology department | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E21** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |
| **E22** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E23** | Hospital assistant in ophthalmology department | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E24** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |
| **E25** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E26** | Administration staff in Ophthalmology department | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E27** | How many civil servant(Specify number, write 00 if none) | How many civil servant(Specify number, write 00 if none) |
| **E28** | How many non-civil servant(Specify number, write 00 if none) | How many non-civil servant(Specify number, write 00 if none) |
| **E29** | How many Ophthalmologist attended training in the past one year ? | How many non-civil servant(Specify number, write 00 if none) |
| **E30** | What sort of training did they joined? | Cataract=1; Strabismus=2; Medical retina=3; Retinal surgery=4; Glaucoma=5; Pediatric eye specialist=6; Other short course=7 (Can be chosen more than 1) |
| **E31** | What sort of training did they joined? | Cataract=1; Strabismus=2; Medical retina=3; Retinal surgery=4; Glaucoma=5; Pediatric eye specialist=6; Other short course=7 (Can be chosen more than 1) |

| | | |
|---|---|---|
| **E32** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) |
| **E33** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) |
| **E34** | How many nurses are attending a training within the last 1 year? | Specify number (write 00 if not available) |
| **E35** | **Neonatal/NICU unit health officer** | SECTION HEADING |
| **E36** | Pediatriciasn/neonatologists? | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E37** | NICU nurse | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) |
| **E38** | How many NICU pediatricians/ neonatologists attended training in the past one year | Specify number (write 00 if not available) |
| **E39** | What sort of training? | Neonatology=1; ROP screening=2; Other short course=3 (Can be choosen more than 1) |
| **E40** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) |
| **E41** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) |
| | | |
| **F** | **Medical Education** | |
| **F01** | Is the hospital trained medical students (MD)? | Yes=1; No=2 |
| **F02** | if yes, how many students are trained every year? | Specify number (write 00 if not available) |

| | | |
|---|---|---|
| **F03** | Is the hospital host a residency program? | Yes=1; No=2 |
| **F04** | if yes, how many residents are trained every year? | |
| **F05** | Is the hospita ltrained a spesialized fellowship program? | Yes=1; No=2 |
| **F06** | if yes, how many are trained every year? | Specify number (write 00 if not available) |
| **F07** | What kind of specialist fellowship is offered? | Cataract=1; Strabismus=2; Medical retina=3; Retinal surgery=4; Glaucoma=5; Pediatric eye specialist=6; Other short course=7 (Can be chosen more than 1) |
| **F08** | | Cataract=1; Strabismus=2; Medical retina=3; Retinal surgery=4; Glaucoma=5; Pediatric eye specialist=6; Other short course=7 (Can be chosen more than 1) |
| | | |
| **G** | **Hospital Statistics** | |
| **G01** | Amount of new cases registered in clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) |
| **G02** | Amount of new ophthalmology cases registered in the Out Oatient Department during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) |
| **G03** | Amount of patient admission in 2018 | Write down the number (Input 0000 if no case and 9999 if the data is not available) |
| **G04** | Amount of eye patient admission in 2018 | Write down the number (Input 0000 if no case and 9999 if the data is not available) |
| | | |
| | | |
| **G05** | **Researcher comments** | |
| | | |
| | | |

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|---|---|---|
| | | |
| **G06** | Researcher who fill in the questionnaire | |
| **G07** | Team number (1;2;3;4) | |

## Annexure 5: Hospitals providing pediatric eye care services questionnaire

| S.No. | Hospital Information | Coding | Code | | | |
|---|---|---|---|---|---|---|
| **A01** | Hospital name | Input to the column in the right | | | | |
| **A02** | Health care facility code | 8 digit code | | | | |
| **A03** | Address | Input to the column in the right | | | | |
| **A04** | City | Input to the column in the right | | | | |
| **A05** | District | Input district name | | | | |
| **A06** | Telephone number | Input to the column in the right | | | | |
| **A07** | Website | Input to the column in the right | | | | |
| **A08** | Contact person | Input to the column in the right | | | | |
| **A09** | Email address of the contact person | Input to the column in the right | | | | |
| **A10** | Person to be interviewed | Hospital director=1; Head of Ophthalmology Department=2; Head of Pediatric Eye Center service =3; Others: 4 (Detail) _____ | | | | |
| **A11** | Interview date | Date;Month;Year | | | | |
| **A12** | Hospital sector | Government=1; Private=2 | | | | |
| **A13** | Hospital ownership | The Indonesian National Armed Forces (TNI) /Indonesian Police Force (POLISI)/Indonesian state owned enterprices (BUMN)/ Other ministary =1; Non-government Organization(NGO/LSM)/Donation =2; Private=3; Others=4 (Detail)_____ | | | | |
| **A14** | Year of Eye Service started | Input the starting year | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **A15** | Hospital type | Standalone Eye hospital=1; Ophthalmology Department as part of Multi specialists hospital=2. | | | | |
| **A16** | Hospital education status | Education Hospital=1; General hospital=2. | | | | |
| **A17** | Hospital accreditation status | Accredited=1; Not accredited=2 | | | | |
| **A18** | If accredited, when is the last accreditation done? | Input year of accreditation | | | | |
| **A19** | Hospital status | Type A=1; Type B=2; Type C=3; Type D=4 | | | | |
| **A20** | Hospital service level | Secondary=1; Tertiary=2 | | | | |
| | | | | | | |
| **B** | **Hospital Infrastructure** | | | | | |
| **B01** | Is the hospital has allocated beds for children in eye ward or in eye Department? | Yes=1; No=2 | | | | |
| **B02** | If yes, Amount of bed for patients with The Indonesian National Health Insurance System (BPJS) ? | Input number (If no specific alocation input 99) | | | | |
| **B03** | If yes, Amount of bed for private/private insurance patients? | Input number (If no specific alocation input 99) | | | | |
| **B04** | Payment method type | Government insurance=1; Private insurance=2; Payment from government=3; Direct paymet=4 (can be chosen more than 1) | | | | |
| **B05** | Is there a special pediatric eye care services unit? | Yes=1; No=2 | | | | |
| **B06** | Is pediatric consultation room available at the Outpatient clinic ? | Yes=1; No=2 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **B07** | if yes, how is the condition? | Good and used regularly=1; Bad condition and unable to be used=2 (Good: Enough room, slit lamp, attractive and colorful decoration, adjustable chair, adequate ventilation - All must available) | | | |
| **B08** | Is pediatric examination room available at the Outpatient clinic ? | Yes=1; No=2 | | | |
| **B09** | If available , how is the condition? | Good and used regularly=1; Bad condition and unable to be used=2 (Good: Adequate lightening settings including a curtain to dim the room; Eye drops/ basic medication for pediatric; Bed or chair is available for examination procedure - All must available) | | | |
| **B10** | Is the room for pediatric visual acuity examination available? | Yes=1; No=2 | | | |
| **B11** | If available , how is the condition? | Good and used regularly=1; Bad condition and unable to be used=2 (Good condition: within 6 meters distance for visual acuity examination; Availability of pediatric visual acuity chart; Good lightening; quiet area; Trial set and frame for children. - All must available to get Good score) | | | |
| **B12** | Is there any adequate room for pediatric refraction test ? | Yes=1; No=2 | | | |
| **B13** | If available , how is the condition? | Good and used regularly=1; Bad condition and unable to be used=2 (Good condition: within 6 meters distance for visual acuity examination; Availability of pediatric visual acuity chart; Good lightening; quiet area; Trial set and frame for children) | | | |
| **B14** | Is playground for children available? | Yes=1; No=2 | | | |
| **B15** | If available , how is the condition? | Good and used regularly=1; Bad and can not be used=2 (Good: Enough toys; Enough space; Safe and protected area) | | | |

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|---|---|---|---|---|---|---|
| **B16** | Is dining room for children available? | Yes=1; No=2 | | | | |
| **B17** | Is pediatric consultation room available at the Outpatient clinic ? | Yes=1; No=2 | | | | |
| **B18** | If available , how is the condition? | Good and used regularly=1; Bad and can not be used=2 (Good: private and confidential; Education/ awareness material available). | | | | |
| **B19** | How frequent is the use of consultation room in pediatric eye clinic? | Everyday=1; 2-3 times weekly=2, once weekly=3; Other (detail)=4 _____ | | | | |
| **B20** | Is Optic unit available in the hospital? | Yes=1; No=2 | | | | |
| **B21** | If so, does it dispense spectacles for children? | Yes=1; No=2 | | | | |
| **B22** | If there contact lens unit in the hospital? | Yes=1; No=2 | | | | |
| **B23** | Is contact lens unit serve patients age < 18 year old? | Yes=1; No=2 | | | | |
| **B24** | Is low vision facility for children available? | Yes=1; No=2 | | | | |
| **B25** | Is rehabilitation support for children available? | Yes=1; No=2 | | | | |
| **B26** | Is 24 hours eye emergency service available? | Yes=1; No=2 | | | | |
| **B27** | How many eye operating theatre available in the hospital? | Specify number | | | | |
| **B28** | How many pediatric eye operating theatre available in the hospital? | Specify number | | | | |
| **B29** | How many operating bed available in the operating theatre in each opearating room? | Specify number | | | | |
| **B30** | How many days a week are scheduled for pediatric eye surgery? | Every day=1; 2-3 times weekly; once a week = 3; Based on clinical burden=4; Other (Specify)=5. _____ | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **B31** | How is the medical record maintenance in the outpatient clinic? | Paper=1; Electronic Medical Record =2; Both=3. | | | | |
| **B32** | How is the medical record maintenance in the operating theatre? | Paper=1; Electronic Medical Record =2; Both=3. | | | | |
| **B33** | Is every patients were given a copy of consultation, examination result, and therapy to bring home? | Yes=1; No=2 | | | | |
| **B34** | Does the hospital have a system for tracking children patients who need follow-up? | Yes=1; No=2 | | | | |
| **B35** | How tracking is done? | Telephone=1; Email=2; Message=3;Othe(rspecify) =4 _____ _____ | | | | |
| **B36** | Does the hospital equipped with NICU? | Yes=1; No=2 | | | | |
| **B37** | Are there any alternative NICU within the same area that in conjunction with pediatric eye center? | Yes=1; No=2 | | | | |
| **B38** | If yes, how many NICU are link with pediatric eye center? | Specify number | | | | |
| **B39** | Does the team visit NICU to ROP screening or the babies taken to the pediatric clinic? | Yes, Team visiting NICU=1; Baby is taken to the clinic=2. | | | | |
| **B40** | Does the hospital involved in ROP screening? | Yes=1; No=2 | | | | |
| **B41** | Does the hospital involved in ROP Treatment? | Yes=1; No=2 | | | | |
| **B42** | How to describe your ROP screening modalities? | Regular weekly screening by ophthalmologist in NICU=1; Ophthalmologists visit NICU per on call by the NICU staff=2; Technician/ophthometrist visit NICU with Retcam for screening=3; Babies taken to the pediatric clinic=4; Enter all possible choices. | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **B43** | How babies are examined during screening? | Indirect ophthalmoscope=1; Direct ophthalmoscope=2; Retcam or similar tools=3 | | | | |
| **B44** | Where the baby with severe ROP is handled? | NICU=1; Operating theatre in Mother and child hospital=2; Operating Theatre in eye deparment/hospital=3; 4=Hospital does not Treat ROP; Input all possible response=5. | | | | |
| **B45** | What first treatment is done most frequently? | Laser=1; Cryo=2; Anti-VEGF=3;No ROP management in the hospital=4 Other=5 (specify) _____ | | | | |
| **B46** | What other treatments are usually done? | Laser=1; Cryo=2; Anti-VEGF=3;No ROP management in the hospital=4 Other=5 (specify) _____ ___Enter all possible choices | | | | |
| **B47** | What is the management for baby with ROP grade 4 or 5? | Undergone surgery in this Hospital =1; Refer to other Eye hospital=2; Too late to be treated because babies came in late stage=3; Other=4 (specify) _____ | | | | |
| | | | | | | |
| **C** | **Equipment Inventory** | | | | | |
| **C01** | Slitlamp availability? | Yes=1; No=2 | | | | |
| **C02** | Amount available? | Specify number | | | | |
| **C03** | How many is in good condition and usable? | Specify number | | | | |
| **C04** | Availability of portable slitlamp? | Yes=1; No=2 | | | | |
| **C05** | Amount available? | Specify number | | | | |
| **C06** | How many is in good condition and usable? | Specify number | | | | |
| **C07** | Trial lens set availability? | Yes=1; No=2 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **C08** | Amount available? | Specify number | | | | |
| **C09** | How many is in good condition and usable? | Specify number | | | | |
| **C10** | Child trial frame availability? | Yes=1; No=2 | | | | |
| **C11** | Amount available? | Specify number | | | | |
| **C12** | How many is in good condition and usable? | Specify number | | | | |
| **C13** | Jager card availablity? | Yes=1; No=2 | | | | |
| **C14** | Amount available? | Specify number | | | | |
| **C15** | How many is in good condition and usable? | Specify number | | | | |
| **C16** | Teller's/Cardiff visual acuity card availability? | Yes=1; No=2 | | | | |
| **C17** | Amount available? | Specify number | | | | |
| **C18** | How many is in good condition and usable? | Specify number | | | | |
| **C19** | Other visual acuity chart availability (pediatric visual chart)? If yes, specify _____ | Yes=1; No=2 | | | | |
| **C20** | Amount available? | Specify number | | | | |
| **C21** | How many is in good condition and usable? | Specify number | | | | |
| **C22** | Occluder for cover test availability? | Yes=1; No=2 | | | | |
| **C23** | Amount available? | Specify number | | | | |
| **C24** | How many is in good condition and usable? | Specify number | | | | |
| **C25** | Near fixation target availability? | Yes=1; No=2 | | | | |
| **C26** | Amount available? | Specify number | | | | |
| **C27** | How many is in good condition and usable? | Specify number | | | | |

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|---|---|---|---|---|---|---|
| **C28** | 14 plate Ishihara test availability? | Yes=1; No=2 | | | | |
| **C29** | Amount available? | Specify number | | | | |
| **C30** | How many is in good condition and usable? | Specify number | | | | |
| **C31** | Penlight availability? | Yes=1; No=2 | | | | |
| **C32** | Amount available? | Specify number | | | | |
| **C33** | How many is in good condition and usable? | Specify number | | | | |
| **C34** | Ruler availability? | Yes=1; No=2 | | | | |
| **C35** | Amount available? | Specify number | | | | |
| **C36** | How many is in good condition and usable? | Specify number | | | | |
| **C37** | Retinoscope availability? | Yes=1; No=2 | | | | |
| **C38** | Amount available? | Specify number | | | | |
| **C39** | How many is in good condition and usable? | Specify number | | | | |
| **C40** | Autorefractometer availability | Yes=1; No=2 | | | | |
| **C41** | Amount available? | Specify number | | | | |
| **C42** | How many is in good condition and usable? | Specify number | | | | |
| **C43** | Lensometer availability? | Yes=1; No=2 | | | | |
| **C44** | Amount available? | Specify number | | | | |

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|---|---|---|---|---|---|---|
| **C45** | How many is in good condition and usable? | Specify number | | | | |
| **C46** | Loupe availability? | Yes=1; No=2 | | | | |
| **C47** | Amount available? | Specify number | | | | |
| **C48** | How many is in good condition and usable? | Specify number | | | | |
| **C49** | Low vision kit availability? | Yes=1; No=2 | | | | |
| **C50** | Amount available? | Specify number | | | | |
| **C51** | How many is in good condition and usable? | Specify number | | | | |
| **C52** | If yes, LogMAR availability (distance) ? | Yes=1; No=2 | | | | |
| **C53** | Amount available? | Specify number | | | | |
| **C54** | How many is in good condition and usable? | Specify number | | | | |
| **C55** | Near vision chart availability? | Yes=1; No=2 | | | | |
| **C56** | Amount available? | Specify number | | | | |
| **C57** | How many is in good condition and usable? | Specify number | | | | |
| **C58** | Reading chart availability? | Yes=1; No=2 | | | | |
| **C59** | Amount available? | Specify number | | | | |
| **C60** | How many is in good condition and usable? | Specify number | | | | |
| **C61** | Cross cylinder availability? | Yes=1; No=2 | | | | |

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|---|---|---|---|---|---|---|
| **C62** | Amount available? | Specify number | | | | |
| **C63** | How many is in good condition and usable? | Specify number | | | | |
| **C64** | Contrast sensitivity test availability? | Yes=1; No=2 | | | | |
| **C65** | Amount available? | Specify number | | | | |
| **C66** | How many is in good condition and usable? | Specify number | | | | |
| **C67** | Color vision test availability (D16 panel-Fansworth) ? | Yes=1; No=2 | | | | |
| **C68** | Amount available? | Specify number | | | | |
| **C69** | How many is in good condition and usable? | Specify number | | | | |
| **C70** | Child Visual field function test? | Yes=1; No=2 | | | | |
| **C71** | Amount available? | Specify number | | | | |
| **C72** | How many is in good condition and usable? | Specify number | | | | |
| **C73** | Measuring type availability | Yes=1; No=2 | | | | |
| **C74** | Amount available? | Specify number | | | | |
| **C75** | How many is in good condition and usable? | Specify number | | | | |
| **C76** | Low vision optic tools availability? | Yes=1; No=2 | | | | |
| **C77** | Amount available? | Specify number | | | | |
| **C78** | How many is in good condition and usable? | Specify number | | | | |

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| **C79** | If Yes, is magnifying glass available? | Yes=1; No=2 | | | | |
| **C80** | Amount available? | Specify number | | | | |
| **C81** | How many is in good condition and usable? | Specify number | | | | |
| **C82** | If Yes, is foldable/handheld/standing/dome magnifier available? | Yes=1; No=2 | | | | |
| **C83** | Amount available? | Specify number | | | | |
| **C84** | How many is in good condition and usable? | Specify number | | | | |
| **C85** | Is CCTV for low vision available? | Yes=1; No=2 | | | | |
| **C86** | Amount available? | Specify number | | | | |
| **C87** | How many is in good condition and usable? | Specify number | | | | |
| **C88** | Non-optic tools availability? | Yes=1; No=2 | | | | |
| **C89** | Amount available? | Specify number | | | | |
| **C90** | How many is in good condition and usable? | Specify number | | | | |
| **C91** | Filtered glasses availability? Ketersediaan kacamata filter? | Yes=1; No=2 | | | | |
| **C92** | Amount available? | Specify number | | | | |
| **C93** | How many is in good condition and usable? | Specify number | | | | |
| **C94** | Monocular telescope magnifier availability? | Yes=1; No=2 | | | | |

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| **C95** | Amount available? | Specify number | | | | |
| **C96** | How many is in good condition and usable? | Specify number | | | | |
| **C97** | Schiotz tonometer availability? | Yes=1; No=2 | | | | |
| **C98** | Amount available? | Specify number | | | | |
| **C99** | How many is in good condition and usable? | Specify number | | | | |
| **C100** | Goldmann/automatic perimetry availability? | Yes=1; No=2 | | | | |
| **C101** | Amount available? | Specify number | | | | |
| **C102** | How many is in good condition and usable? | Specify number | | | | |
| **C103** | Non-contact tonometry availability? | Yes=1; No=2 | | | | |
| **C104** | Amount available? | Specify number | | | | |
| **C105** | How many is in good condition and usable? | Specify number | | | | |
| **C106** | Gonioscopy availability? | Yes=1; No=2 | | | | |
| **C107** | Amount available? | Specify number | | | | |
| **C108** | How many is in good condition and usable? | Specify number | | | | |
| **C109** | Tonopen availability? | Yes=1; No=2 | | | | |
| **C110** | Amount available? | Specify number | | | | |
| **C111** | How many is in good condition and usable? | Specify number | | | | |

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| **C112** | I care availability? | Yes=1; No=2 | | | | |
| **C113** | Amount available? | Specify number | | | | |
| **C114** | How many is in good condition and usable? | Specify number | | | | |
| **C115** | Handheld aplanation tonometer availability? If Yes, specify -----) | Yes=1; No=2 | | | | |
| **C116** | If Yes, specify -----)_____ | | | | | |
| **C117** | Amount available? | Specify number | | | | |
| **C118** | Amount available? | Specify number | | | | |
| **C119** | Kampimetry availability? | Yes=1; No=2 | | | | |
| **C120** | Amount available? | Specify number | | | | |
| **C121** | How many is in good condition and usable? | Specify number | | | | |
| **C122** | Direct Ophthalmoscope availability? | Yes=1; No=2 | | | | |
| **C123** | Amount available? | Specify number | | | | |
| **C124** | How many is in good condition and usable? | Specify number | | | | |
| **C125** | Indirect Ophthalmoscope availability? | Yes=1; No=2 | | | | |
| **C126** | Amount available? | Specify number | | | | |
| **C127** | How many is in good condition and usable? | Specify number | | | | |

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| **C128** | 28D lens availability? | Yes=1; No=2 | | | | |
| **C129** | Amount available? | Specify number | | | | |
| **C130** | How many is in good condition and usable? | Specify number | | | | |
| **C131** | 78D lens availability? | Yes=1; No=2 | | | | |
| **C132** | Amount available? | Specify number | | | | |
| **C133** | How many is in good condition and usable? | Specify number | | | | |
| **C134** | 90D lens availability? | Yes=1; No=2 | | | | |
| **C135** | Amount available? | Specify number | | | | |
| **C136** | How many is in good condition and usable? | Specify number | | | | |
| **C137** | Indirect Laser Ophthalmoscope availability? | Yes=1; No=2 | | | | |
| **C138** | Amount available? | Specify number | | | | |
| **C139** | How many is in good condition and usable? | Specify number | | | | |
| **C140** | Placido test (Keratoscope) availability? | Yes=1; No=2 | | | | |
| **C141** | Amount available? | Specify number | | | | |
| **C142** | How many is in good condition and usable? | Specify number | | | | |
| **C143** | Keratometry availabiliy? | Yes=1; No=2 | | | | |
| **C144** | Amount available? | Specify number | | | | |

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| **C145** | How many is in good condition and usable? | Specify number | | | | |
| **C146** | Portable keratometry availability? | Yes=1; No=2 | | | | |
| **C147** | Amount available? | Specify number | | | | |
| **C148** | How many is in good condition and usable? | Specify number | | | | |
| **C149** | ERG/EOG/VER availability? | Yes=1; No=2 | | | | |
| **C150** | Amount available? | Specify number | | | | |
| **C151** | How many is in good condition and usable? | Specify number | | | | |
| **C152** | Biometri/A-scan availability? | Yes=1; No=2 | | | | |
| **C153** | Amount available? | Specify number | | | | |
| **C154** | How many is in good condition and usable? | Specify number | | | | |
| **C155** | B-Scan ultrasonography availability? | Yes=1; No=2 | | | | |
| **C156** | Amount available? | Specify number | | | | |
| **C157** | How many is in good condition and usable? | Specify number | | | | |
| **C158** | Argon/diode Laser availability? | Yes=1; No=2 | | | | |
| **C159** | Amount available? | Specify number | | | | |
| **C160** | How many is in good condition and usable? | Specify number | | | | |
| **C161** | Retcam/ Neo Retina availability? | Yes=1; No=2 | | | | |

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| **C162** | Amount available? | Specify number | | | | |
| **C163** | How many is in good condition and usable? | Specify number | | | | |
| **C164** | Is fundus camera for children available? | Yes=1; No=2 | | | | |
| **C165** | Amount available? | Specify number | | | | |
| **C166** | How many is in good condition and usable? | Specify number | | | | |
| **C167** | Is OCT available? | Yes=1; No=2 | | | | |
| **C168** | Amount available? | Specify number | | | | |
| **C169** | How many is in good condition and usable? | Specify number | | | | |
| **C170** | Is Punctum dilator & Anel test canule available? | Yes=1; No=2 | | | | |
| **C171** | Amount available? | Specify number | | | | |
| **C172** | How many is in good condition and usable? | Specify number | | | | |
| **C173** | Is verban scissors available? | Yes=1; No=2 | | | | |
| **C174** | Amount available? | Specify number | | | | |
| **C175** | How many is in good condition and usable? | Specify number | | | | |
| **C176** | Is tools forceps available? | Yes=1; No=2 | | | | |
| **C177** | Amount available? | Specify number | | | | |
| **C178** | How many is in good condition and usable? | Specify number | | | | |

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| **C179** | Is eyelid speculum/retractor available? | Yes=1; No=2 | | | | |
| **C180** | Amount available? | Specify number | | | | |
| **C181** | How many is in good condition and usable? | Specify number | | | | |
| **C182** | Eksophthalmometer Hertel availability? | Yes=1; No=2 | | | | |
| **C183** | Amount available? | Specify number | | | | |
| **C184** | How many is in good condition and usable? | Specify number | | | | |
| **C185** | Synophthopore availability? | Yes=1; No=2 | | | | |
| **C186** | Amount available? | Specify number | | | | |
| **C187** | How many is in good condition and usable? | Specify number | | | | |
| **C188** | Hess Charts availability? | Yes=1; No=2 | | | | |
| **C189** | Amount available? | Specify number | | | | |
| **C190** | How many is in good condition and usable? | Specify number | | | | |
| **C191** | Bar prisma/loose prism availability? | Yes=1; No=2 | | | | |
| **C192** | Amount available? | Specify number | | | | |
| **C193** | How many is in good condition and usable? | Specify number | | | | |
| **C194** | Kimura spatula availability? | Yes=1; No=2 | | | | |
| **C195** | Amount available? | Specify number | | | | |

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| **C196** | How many is in good condition and usable? | Specify number | | | | |
| **C197** | Is fluorescein paper/drops routinely available? | Yes=1; No=2 | | | | |
| **C198** | Is object glass and cover glass routinely available? | Yes=1; No=2 | | | | |
| **C199** | Other pediatric diagnostic tools availability? | Yes=1; No=2 | | | | |
| **C200** | If yes, specify, _____ __ | | | | | |
| **C201** | Is CT/MRI/Radiology facilities available in the hospital? | Yes=1; No=2 | | | | |
| **C202** | Type of imaging system available in the hospital? | X-Ray=1; CT=2; MRI=3; None=4 (Multiple Responses) | | | | |
| | **Anesthesia Equipment** | | | | | |
| **C202** | Is Boyles apparatus available in the pediatric operating theatre? | Yes=1; No=2 | | | | |
| **C204** | Amount available? | Specify number | | | | |
| **C205** | How many is in good condition and usable? | Specify number | | | | |
| **C206** | Is Ambu Bagavailable in the pediatric operating theatre? | Yes=1; No=2 | | | | |
| **C207** | Amount available? | Specify number | | | | |
| **C208** | How many is in good condition and usable? | Specify number | | | | |
| **C209** | KMonitor and pulse oxymeteravailability? | Yes=1; No=2 | | | | |
| **C210** | Amount available? | Specify number | | | | |
| **C211** | How many is in good condition and usable? | Specify number | | | | |

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| **C212** | Is binocular microscope available in the pediatric operating theatre? | Yes=1; No=2 | | | | |
| **C213** | Amount available? | Specify number | | | | |
| **C214** | How many is in good condition and usable? | Specify number | | | | |
| **C215** | Is sterilisator available in the eye/general operating theatre? | Yes=1; No=2 | | | | |
| **C216** | Amount available? | Specify number | | | | |
| **C217** | How many is in good condition and usable? | Specify number | | | | |
| **C218** | Is pediatric cryo probe available? | Yes=1; No=2 | | | | |
| **C219** | Amount available? | Specify number | | | | |
| **C220** | How many is in good condition and usable? | Specify number | | | | |
| **C221** | Is Infant speculum available? | Yes=1; No=2 | | | | |
| **C222** | Amount available? | Specify number | | | | |
| **C223** | How many is in good condition and usable? | Specify number | | | | |
| **C224** | Is scleral indentator available? | Yes=1; No=2 | | | | |
| **C225** | Amount available? | Specify number | | | | |
| **C226** | How many is in good condition and usable? | Specify number | | | | |
| **C227** | Is Oxygen blender available? | Yes=1; No=2 | | | | |
| **C228** | Amount available | Specify number | | | | |

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| **C229** | How many is in good condition and usable? | Specify number | | | | |
| **C230** | Is Continuous positive airway pressure (CPAP) | Yes=1; No=2 | | | | |
| **C231** | Amount available | Specify number | | | | |
| **C232** | How many is in good condition and usable? | Specify number | | | | |
| **C233** | Is there any inkubator? | Yes=1; No=2 | | | | |
| **C234** | Amount available | Specify number | | | | |
| **C235** | How many is in good condition and usable? | Specify number | | | | |
| **C236** | Is mechanic Respirator or Ventilator available? | Yes=1; No=2 | | | | |
| **C237** | Amount available | Specify number | | | | |
| **C238** | How many is in good condition and usable? | Specify number | | | | |
| **C239** | Is Endotracheal tube (ETT) available regularly? | Yes=1; No=2 | | | | |
| **C240** | Is baby warmer available? i | Yes=1; No=2 | | | | |
| **C241** | Amount available | Specify number | | | | |
| **C242** | How many is in good condition and usable? | Specify number | | | | |
| **C243** | Is Syringe Pumpavailable? | Yes=1; No=2 | | | | |
| **C244** | Amount available | Specify number | | | | |
| **C245** | How many is in good condition and usable? | Specify number | | | | |

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| **C246** | Is Micro Infusion Pumpavailable? | Yes=1; No=2 | | | | |
| **C247** | Amount available | Specify number | | | | |
| **C248** | How many is in good condition and usable? | Specify number | | | | |
| **C249** | What is the type of tools maintenance agreement? | Annual service agreement=1; Whole package agreement including spare parts=2; No agreement=3; others=4 (specify) _____ | | | | |
| **C250** | How long is the normal time needed for maintenance? | 1-2 daysi=1; 3-7days=2; 8-14 days=3; 15-30 days=4; More than 1 month=5 | | | | |
| **C251** | How long is the evaluation or surgery suspended if the equipment was broken? | Re-schedule is not necessary=1; Suspended less than 1 week=2; suspended more than 1 week=3; suspended 1 month=4; suspended to uncertain time=5; others=6 (specify) _____ | | | | |
| **C252** | Is spare parts available ? | Usually available in Indonesia=1; Imported=2 | | | | |
| **C253** | Is the hospital have maintenance technician resources? | Yes=1; No=2 | | | | |
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| **D** | **Protocols and Standard Operating Procedures** | | | | | |
| **D01** | Is there printed protocol for doctors working in OPD on Pediatric Eye Care? | Yes=1; No=2 | | | | |
| **D02** | Is there a printed ROP protocol for doctors in Pediatric operating theatre? | Yes=1; No=2 | | | | |
| **D03** | Is there a printed protocol for doctors in ROP clinic? | Yes=1; No=2 | | | | |

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| **D04** | Is there a printed ROP protocol for doctors in operating theatre? | Yes=1; No=2 | | | |
| **D05** | Is the printed protocol used regularly ? | Yes, always=1; Yes,sometimes=2; No=3; Not applicable as not available=4 | | | |
| **D06** | Is the printed sheet including information about pediatric eye disease and ROP available for parents? | Yes=1; No=2 | | | |
| **D07** | Is there a consultation pathway from pediatrician/neonatologist to pediatric eye specialist? | Yes=1; No=2 | | | |
| **D09** | Is the national guidelines for ROP followed by all premature (according to the criteria) and other high risk baby? | Yes=1; No=2 | | | |
| **D10** | Is every premature baby (based on the criteria) underwent ROP screening? | All premature baby are screened=1; All new-born baby are screened=2; No routine screening performed in this hospital=3; Others =4 (specify) _____ | | | |
| **D11** | Is every parents from premature baby informed about how to manage the risk of ROP? | Yes=1; No=2 | | | |
| **D12** | Is every parents of premature baby were given counselling about ROP? | Yes, adequate councelling=1; Yes, but inadequate=2; no councelling=3. | | | |
| **D13** | If yes, who is in charge for routine councellling? | Pediatric eye specialist=1; Neonatologist/pediatrician=2; Nurse=3; councellor=4; resident=5; others =6 (specify) _____ | | | |
| **D14** | Is child protection rule applied in the hospital? | Yes=1; No=2 | | | |
| **E** | **Human Resources** | | | | |
| | **Pediatric Outpatient clinics** | | | | |

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| **E01** | General practicioner | Specify number (Write 00 for non civil servant) (Civil servant + non Civil servant with certification but not a member of training/residency) | | | | |
| **E02** | General practicioner with employment status 1 | How many civil servant(Specify number, write 00 if none) | | | | |
| **E03** | General practicioner with employment status 2 | How many non-civil servant(Specify number, write 00 if none) | | | | |
| **E04** | Ophthalmologist | Specify number (Write 00 for non civil servant) (Civil servant + non Civil servant with certification but not a member of training/residency) | | | | |
| **E05** | Ophthalmologist with employment status 1 | How many civil servant(Specify number, write 00 if none) | | | | |
| **E06** | Ophthalmologist with employment status 2 | How many non-civil servant(Specify number, write 00 if none) | | | | |
| **E07** | Ophthalmologist with employment status 3 | How many resident (Specify number, write 00 if none) | | | | |
| **E08** | Optometrists/Ophthalmic Assistants/ Orthoptists | Specify number (Write 00 for non civil servant) (Civil servant + non Civil servant with certification but not a member of training/residency) | | | | |
| **E09** | Optometrists/Ophthalmic Assistants/ Orthoptists with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E10** | Optometrists/Ophthalmic Assistants/ Orthoptists with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E11** | Optometrists/Ophthalmic Assistants/ Orthoptists with employment status 3 | How many are trainee? (Specify number, write 00 if none) | | | | |
| **E12** | Ophthalmology nurse | Specify number (Write 00 for non civil servant) (Civil servant + non Civil servant with certification but not a member of training/residency) | 6 | | | |
| **E13** | Ophthalmology nurses with status 1 | How many civil servant (Specify number, write 00 if none) | 2 | | | |

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| **E14** | Ophthalmology nurses with status 2 | How many non-civil servant (Specify number, write 00 if none) | 2 | | | |
| **E15** | Ophthalmology nurses with status 3 | How many trainee? (Specify number, write 00 if none) | 2 | | | |
| **E16** | Anesthesiologist | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) | | | | |
| **E17** | Anesthesiologist with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E18** | Anesthesiologist with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E19** | Anesthesiologist with employment status 3 | How many Resident? (Specify number, write 00 if none) | | | | |
| **E20** | How many anesthesiologist have attended pediatric surgery training? | Specify number | | | | |
| **E21** | **Child Councelor** | Specify number (write 00 if not available) | | | | |
| **E22** | Child Councelor with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E23** | Child Councelor with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E24** | **Computer operator/medical record in Ophthalmology department** | Specify number (write 00 if not available) | | | | |
| **E25** | Computer operator/medical record in Ophthalmology department with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E26** | Computer operator/medical record in Ophthalmology department with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |

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| **E27** | **Hospital assistant** | Specify number (write 00 if not available) | | | | |
| **E28** | Hospital assistant with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E29** | Hospital assistant with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E30** | **Quality assurance manager** | Specify number (write 00 if not available) | | | | |
| **E31** | Administration staff in Ophthalmology department with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E32** | Administration staff in Ophthalmology department with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E33** | How many ophthalmologists are attending a training within the last 1 year? | Specify number (write 00 if not available) | | | | |
| **E34** | What sort of training? | Cataract=1; Strabismus=2; Medical retina=3; Retinal surgery=4; Glaucoma=5; Pediatric eye specialist=6; Other short course=7 (Can be chosen more than 1) | | | | |
| **E35** | What sort of training? | Cataract=1; Strabismus=2; Medical retina=3; Retinal surgery=4; Glaucoma=5; Pediatric eye specialist=6; Other short course=7 (Can be chosen more than 1) | | | | |
| **E36** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) | | | | |
| **E37** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) | | | | |

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|---|---|---|---|---|---|---|
| **E38** | How many ophtometrists/OA are attending a training within the last 1 year? | Specify number (write 00 if not available) | | | | |
| **E39** | What sort of training? | Child refraction=1; orthoptic=2;ROP screening =3; Other short course=4 (Can be choosen more than 1) | | | | |
| **E40** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) | | | | |
| **E41** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) | | | | |
| **E42** | How many nurses are attending a training within the last 1 year? | Specify number (write 00 if not available) | | | | |
| **E43** | What sort of training? | Child care=1; ROP screening =3; Other short course=3 (Can be choosen more than 1) | | | | |
| **E44** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) | | | | |
| **E45** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) | | | | |
| **E46** | **Neonatal/NICU unit health officer** | | | | | |
| **E47** | Pediatriciasn/neonatologists? | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) | | | | |
| **E48** | Pediatrician/neonatologists?with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |

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|---|---|---|---|---|---|---|
| **E49** | Pediatrician/neonatologists?with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E50** | Pediatrician/neonatologists?with employment status 3 | How many residents? (Specify number, write 00 if none) | | | | |
| **E51** | NICU nurse | Specify number (Write 00 for non civil servant) (Civil servant+ non Civil servant with certification but not a member of training/residency) | | | | |
| **E52** | NICU nurse with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E53** | NICU nurse with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E54** | NICU nurse with employment status 3 | How many trainee? (Specify number, write 00 if none) | | | | |
| **E55** | Child councelor in NICU | Specify number (write 00 if not available) | | | | |
| **E56** | Child councelor in NICU with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E57** | Child councelor in NICU with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E58** | Administrasion staff in NICU | Specify number (write 00 if not available) | | | | |
| **E59** | Administrasion staff in NICU with employment status 1 | How many civil servant (Specify number, write 00 if none) | | | | |
| **E60** | Administrasion staff in NICU with employment status 2 | How many non-civil servant (Specify number, write 00 if none) | | | | |
| **E61** | How many NICU pediatricians/ neonatologists attended training in the past one year | Specify number (write 00 if not available) | | | | |
| **E62** | How many pediatricians/ neonatologists attended training in the past one year | Specify number (write 00 if not available) | | | | |
| **E63** | What sort of training? | Neonatology=1; ROP screening=2; Other short | | | | |

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| | | course=3 (Can be choosen more than 1) | | | | |
| **E64** | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) | | | | |
| | Who host the training? | Central government=1; Province=2; External hospital=3; Hospital(Internal)=4; Professional organization=5; Foreign hospital=6; WHO=7 (Can be choosen more than 1) | | | | |
| **F** | **Medical Education** | | | | | |
| **F01** | Is the hospital trained medical students (MD)? | Yes=1; No=2 | | | | |
| **F02** | if yes, how many students are trained every year? | Specify number (write 00 if not available) | | | | |
| **F03** | Is the hospital host a residency program? | Yes=1; No=2 | | | | |
| **F04** | if yes, how many residents are trained every year? | | | | | |
| **F05** | Is the hospital trained a spesialized fellowship program? | Yes=1; No=2 | | | | |
| **F06** | if yes, how many are trained every year? | Specify number (write 00 if not available) | | | | |
| **F07** | What kind of specialist fellowship is offered? | Cataract=1; Strabismus=2; Medical retina=3; Retinal surgery=4; Glaucoma=5; Pediatric eye specialist=6; Other short course=7 (Can be chosen more than 1) | | | | |
| **F08** | What kind of specialist fellowship is offered? | Cataract=1; Strabismus=2; Medical retina=3; Retinal surgery=4; Glaucoma=5; Pediatric eye specialist=6; Other short course=7 (Can be chosen more than 1) | | | | |

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| **G** | **Hospital Statistics** | | | | | |
| **G01** | Amount of new cases registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G02** | Amount of new male cases registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G03** | Amount of new female cases registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G04** | Amount of new cases <5 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G05** | Amount of new cases age 6-10 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G06** | Amount of new cases age 11-18 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G07** | Amount of new male cases <5 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G08** | Amount of new male cases age 6-10 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G09** | Amount of new male cases age 11-18 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G10** | Amount of new female cases <5 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G11** | Amount of new female cases age 6-10 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |

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| **G12** | Amount of new female cases age 11-18 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G13** | Amount of repeated cases registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G14** | Amount of new cases hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G15** | Amount of new male cases hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G16** | Amount of new female cases hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G17** | Amount of new cases age 0-5 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G18** | Amount of new male cases age 0-5 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G19** | Amount of new female cases age 0-5 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G20** | Amount of new cases age 6-10 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G21** | Amount of new male cases age 6-10 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G22** | Amount of new female cases age 6-10 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G23** | Amount of new cases age 11-18 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **G24** | Amount of new male cases age 11-18 year old hospitalized in | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |

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| | pediatric ward during 2018. | | | | | |
| **G25** | Amount of new female cases age 11-18 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| | **Diagnosis in policlinic (new cases) in 2018** | Modify sub heading | | | | |
| **G26** | Refractive error (Code ICD :H52.0; H52.1) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G27** | Pediatric cataract (Code ICD: H12; H26) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G28** | Pediatrict glaucoma/ Buphtalmos (Code ICD: H15.0) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G29** | Adnexal diseases (Code ICD:H01.0;H04.3;H02.1) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G30** | Strabismus (Code ICD:H50.0 -H50.9) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G31** | Ambliopia (Code ICD: H53.0) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G32** | Vitamin A related Corneal ulcer/Keratomalasia (Code ICD:H18.44;E54) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G33** | Other corneal ulcer (Kode ICD: H16) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G34** | Keratoconus (Kode ICD:H18.6) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G35** | Retinopathy of prematurity (Kode ICD:H35.10) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G36** | Ocular trauma (Kode ICD:S05) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G37** | Alergic conjunctivitis (Kode ICD:H10.45) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |

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| **G38** | Other Conjungtivitis (Kode ICD :H10.9) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G39** | Retinal Dystrophy (Kode ICD:H35.50) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G40** | Ptosis (Kode ICD:Q10.0; H02.419) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G41** | Other whole globe (Kode ICD:H44) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G42** | Other retinal disease (Kode ICD:H35) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G43** | Other (Kode ICD :H57) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G44** | Undiagnosed (ICD Code) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| | **Diagnosis for surgery in 2018** | Modify sub heading | | | | |
| **G45** | Pediatric cataract (Code ICD: H12; H26) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G46** | Pediatrict glaucoma/ Buphtalmos (Code ICD: H15.0) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G47** | Keratoplasty (Kode ICD: 08R8XKZ;08R9XKZ ) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G48** | Strabismus (Kode ICD:H50.0 -H50.9) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G49** | Laser/Cryo for ROP (Kode ICD:H35.10) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G50** | Anti-VEGF for ROP (Kode ICD :H35.10) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G51** | VR surgery for ROP (Kode ICD :H35.10) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G52** | Ptosis (Kode ICD:Q10.0; H02.419) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |

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| **G53** | DCR/DCT ( ICD Code) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G54** | Examination under anesthesia (EUA) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G55** | Probing (ICD Code) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G56** | Enukleation (Kode ICD:Z90.01) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G57** | Chalazion (Kode ICD:H0013-0019) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G58** | Retinoblastoma (ICD Code:C69) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G59** | Dermoid cyst (Kode ICD:H02.82) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G60** | Other (unspecified above) | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| **G61** | **Researcher comments** | | | | | |
| | | | | | | |
| | | | | | | |
| **G62** | Researcher who fill in the questionnaire | | | | | |
| **G63** | Team number (1;2;3;4) | | | | | |

## Annexure 6: Observational Checklist

| S.No. | Information | Coding Instructions | Code | |
|---|---|---|---|---|
| **A01** | Researcher Name | Input to the column in the right | | |
| **A02** | Hospital Name | Input to the column in the right | | |
| **A04** | Hospital code | Input 8 digit code | | |
| **A05** | Address | Input to the column in the right | | |
| **A06** | Village/City | Input to the column in the right | | |
| **A07** | District | Input district name | | |
| **A08** | Phone Number | Input to the column in the right | | |
| **A09** | Contact person | Input to the column in the right | | |
| **A10** | Email address of the contact person | Input to the column in the right | | |
| **A11** | Person to be interviewed | Head of Center = 1; Others = 2 (Specify) _____ | | |
| **A12** | Observation visit date | Date; Month; Year | | |
| | | | | |
| **B** | **Hospital Infrastructure** | | | |
| **B01** | Bed availability for pediatric patients | Yes=1, No=2 | | |
| **B02** | Is pediatric eye center unit available ? | Yes=1, No=2 | | |

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| **B03** | Is pediatric consultation room available at the Outpatient clinic ? | Yes=1, No=2 | | | |
| **B04** | Is it in proper condition and may be used regularly? | Yes=1, No=2 | | | |
| **B05** | How is pediatric examination room condition? | Proper and may be used regularly =1; Inadequate = 2 | | | |
| **B06** | Eye care clinic consultation frequence? | Everyday=1; 2-3 times/week= 2; Once a week=3 | | | |
| **B07** | Amount Operation theatre unit available for pediatric surgery? | Amount of unit? | | | |
| **B08** | Frequence of pediatric surgery | Everyday=1; 2-3 times/week= 2; Once a week=3 | | | |
| **B09** | Is ROP screening performed in NICU of Hospital? | Yes=1, No=2 | | | |
| **B10** | How the screening is performed? | Team visit to NICU=1; Babies taken to the clinic to be screened = 2 | | | |
| | | | | | |
| **C.** | **Equipments and services** | need to modify section heading? | | | |
| **C01** | Is there a suitability between all functional equipment mention in the questioner and the hospital at the time of observation | Yes, all suitable=1; Yes, Mostly=2; No=3 (More than 50% tools in proper condition consider as Yes, if Not consider as No =3 ) | | | |
| **C02** | Is there a screening conducted at the time of observation? | Yes=1; No=2 | | | |
| **C03** | Is there any pediatric surgery performed during observation? ? | Yes=1; No=2 | | | |
| **C04** | How long will it take to perform a pediatric examination in the clinic, start from registration ? (observe 2-3 children and record the average time) | Write down in minute | | | |

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| **C05** | Is the visual acuity measured in a reliable way? | Yes, in a proper method =1; Yes but in inappropriate method=2; No=3. | | | | |
| **C06** | Is there a pediatric visual acuity examination performed during visitation? | Yes=1; No=2 | | | | |
| **C07** | How long will it take to perform a visual acuity examination in the clinic ? (observe 5 children and record the average time) | Write down in minute | | | | |
| **C08** | Are there any unused or unfunctioned equipments in the hospital? | Yes=1; No=2 | | | | |
| **C09** | Whether consultation is performed to child or parents? | Yes=1; No=2 | | | | |
| **C10** | How long will it take to perform counseling to a whole family and child? (observe5 children and record the average time) | Write down in minute | | | | |
| | Is the condition of the child consultation room adequate? | Adequate criterias: Enough room, slit lamp, attractive and colorful decoration, adjustable chair, adequate ventilation.Adequate=1; Inadequate =2. | | | | |
| | How is the status of child axaminataion room, if available | Not available=1; Adequate=2; Inadequate=3. (Adequate lightening settings including a curtain to dim the room; Eye drops/ basic medication for pediatric; Bed or chair is available for examination procedure). | | | | |
| | Is the room for visual acuity examination available? | In good condition and used regularly =1; Bad condition = 2 (Good condition: within 6 meters distance for visual acuity examination; Availability of pediatric visual acuity chart; Good lightening; quiet area; Trial set and frame for children. | | | | |

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| | Is the pediatric refraction test adequate for children? | In good condition and used regularly =1; Bad condition = 2 (Good condition: within 6 meters distance for visual acuity examination; Availability of pediatric visual acuity chart; Good lightening; quiet area; Trial set and frame for children. | | | | |
| | Playground condition, if available | Good and used regularly=1; Bad and can not be used=2 (Good: Enough toys; Enough space; Safe and protected area) | | | | |
| **C11** | Whether Radiology/CT/MRI facility available or accessible by referral system? | Yes, available in the hospital=1; Yes, accessible by referral=2; No=3. | | | | |
| **C12** | Is the hospital have maintenance technician resources? | Yes=1; No=2 | | | | |
| **C13** | Is there a computer available to registered pediatric patient data? | Yes=1; No=2 | | | | |
| | | | | | | |
| **D** | **Protocol and standard operational procedure** | add/ModifySection Name in front end | | | | |
| **D01** | Is there a printed protocol for doctors in pediatric eye clinic? | Yes=1; No=2 | | | | |
| **D02** | Is there a printed protocol for doctors in operating theatre? | Yes=1; No=2 | | | | |
| **D03** | Is there a printed protocol for doctors in ROP clinic? | Yes=1; No=2 | | | | |
| **D04** | Is there a printed ROP protocol for doctors in operating theatre? | Yes=1; No=2 | | | | |
| **D05** | Is the printed protocol used by the doctors regularly ? | Yes=1; No=2 | | | | |
| **D06** | Is the printed sheet including information about pediatric eye | Yes=1; No=2 | | | | |

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| | disease and ROP available for parents? | | | | | |
| | | | | | | |
| **E** | **Hospital Statistics** | | | | | |
| **E01** | Amount of new cases registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **E02** | Amount of new male cases registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **E03** | Amount of new female cases registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **E04** | Amount of new cases <5 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **E05** | Amount of new male cases age 6-10 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **E06** | Amount of female new cases age 11-18 year old registered in pediatric clinic during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **E07** | Amount of new male cases age 0-5 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **E08** | Amount of new in cases age 6-10 year old hospitalized in pediatric ward during 2018 | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **E09** | Amount of new female cases age 11-18 year old hospitalized in pediatric ward during 2018. | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
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| **F** | **Diagnosis** | | | | | |
| **F01** | Is the diagnosis was wrote down by the doctor? | Yes=1; No=2 | | | | |
| **F02** | Strabismus in policlinic | Write down the number (Input 0000 if no case and 9999 if the data is not available) | | | | |
| **F03** | Is the surgery detail recorded? | Yes=1; No=2 | | | | |
| **F04** | Laser/Cryo for ROP | Write down the number (Input 00 if no case and 9999 if the data is not available) | | | | |
| | | | | | | |
| | **Researcher comment** | | | | | |
| | | | | | | |
| | | | | | | |