Ministério da Saúde

Ministry of Health, Timor-Leste

Summary of Report

Rapid Assessment of Avoidable Blindness

Timor-Leste, 2016

Technical Support: International Agency for Prevention of Blindness (IAPB)

Financial Support: Lions Club International Foundation (LCIF) Grant SF 1868/UND

LIONS INTERNATIONAL

IAPB SOUTH EAST ASIA

Map of Timor-Leste

Executive Summary

Ministry of Health Timor-Leste, East Timor Eye Care Programme carried out a national representative blindness and visual impairment survey among the people age 50 years and over in Timor-Leste in 2016. The survey work was conducted with financial support from Lions Club International Foundation (LCIF. Grant SF 1869/UND), technical support from International Agency for Prevention of Blindness (IAPB), South East Asia Region and local financial administration by the Royal Australasian College of Surgeon (RACS).

Method

RAAB5 one of the preferred survey methodologies by WHO Global Action Plan 2014-2019 was used in this survey. The survey enrolled 3350 eligible study participants in 67 randomly selected clusters spread over all 13 districts of Timor-Leste. Three survey teams led by Ophthalmologist were trained for data collection of survey work. Two teams actually deployed at a time for data collection. The teams were trained by International Centre for Eye Health (ICEH), London School of Hygiene and Tropical Medicine (LSHTM) certified trainer for collection and management of data. Door to door visit in selected study clusters was made for enrollment of eligible study participants and to perform clinical examination by ophthalmologist for the survey data collection. The peek mRAAB smartphone application was used for data collection by which data could be transferred to server computer in Dili (capital) by email attachment. The actual data collection of the survey was carried out from 12 July to 30 September 2016.

Findings:

The survey was able to obtain 97.1% response rate. The age and gender adjusted prevalence of blindness was 2.8% (Male 2.4% and female 3.1%) with presenting visual acuity (PVA) cutoff <3/60 (WHO definition of blindness). Similarly severe visual impairment PVA <6/60 was 4.5% (Male 4.0 and Female 4.9) and moderate visual impairment PVA <6/18 was 12.5% (Male 12.0% and Female 12.5%) was found in survey.

Cataract was the leading cause of blindness- 79.4% of overall blindness. Age and gender adjusted cataract surgical coverage (CSC) was 41.5% (Male 52.6% and Female 30.6%) among PVA<3/60; 30.9% (Male 40.3% and Female 22.0%) among PVA <6/60 and 16.8% (Male 23.5% and Female 11.3%) PVA <6/18 was found in survey.

Overall good visual outcome was obtained in 62.0% among cataract operated eyes. Remaining were 22.6% borderline outcome and 15.3% were with poor outcome (according to WHO guidelines).

The major barrier for not to uptake available cataract surgical service in the country was; accessibility to the services (45.5%) and no one to accompany' (24.8%).

Conclusions:

Timor-Leste has still high prevalence of blindness and visual impairment in the country. Cataract surgical coverage is very low compared to other south-east Asian countries. Quality of cataract surgical outcome is not up to WHO recommended level and accessibility to the services is the major barrier to uptake the available cataract surgical services in the country. Another alarming fact revealed in the survey was the gender inequality among the services recipients. Magnitude of blindness was high and cataract surgical coverage was too low among the female gender in the country. The country need to expand eye health services making accessible to all people residing in rural and remote area, skill of eye health human resource need to be further improved to achieve satisfactory improvement in quality of eye health services.

Background:

Timor-Leste (East Timor) is fairly a young nation in South East Asia region. The country got independence in 1999. Since then the country has made significant development in political stability, peace and socio economic development. But, the country need to do a lot to improve its health status indicators such as the infant mortality rate (IMR) and maternal mortality rate (MMR), vaccination, malnutrition and many infectious diseases (tuberculosis, malaria and leprosy).

The country is divided into 13 districts, 65 sub districts, 442 Suco and 2225 Aldea/villages. According to the 2010 census Timor has a population of 1,066,409 (Males 51%- 544,198 and female 49% - 522,211)Timor-Leste has one referral hospital in capital city Dili, with an eye clinic that offers general eye care services including correction of refractive error and cataract surgical service. There are two provincial eye clinics; they provide primary eye care and refraction services. The Ministry of Health is working to establish and maintain a cost-effective health system and eye health has been included within the strategic planning framework in recognition of the significant economic and social impact of blindness.

A prevalence of blindness study conducted in 2005[1] in Timor-Leste showed 4.1% blindness and 17.7% visual impairment amongst the population aged 40 years and over. The leading causes of blindness and visual impairment were cataract and uncorrected refractive error (URE). This survey showed a very high prevalence of blindness in the country. In the last ten years there has been some development in eye care services in collaborative effort of the government with INGO's.

After a decade of eye care services it is important to assess the impact on eye health. Therefore, the East Timor Eye Care Programme, Ministry of Health decided to carry out the RAAB survey with technical support from International Agency for Prevention of Blindness (IAPB) and financial support from the Lions Club International Foundation (LCIF). The Royal Australasian College of Surgeon (RACS) based in Dili, Timor supported with the financial administration and the survey logistics.

The findings of this survey are considered important to inform and revise strategic action plan of eye care service in Timor-Leste.

Survey Method

The survey sampling frame included population aged 50 years and older across all 13 administrative districts of Timor-Leste. The RAAB is designed to look at the risk group of population age 50 and over, since 80 to 90% of blindness is known to occur in this age group. A total of 3,350 study participants aged 50 years and older were enrolled in 67clusters selected for the study. This was based on the cluster sampling procedure, probability proportionate to size. The data collection was preceded by four-days of training and a pilot study. Three survey teams were trained and two survey teams at a time, each lead by an ophthalmologist were mobilised for field work, ocular examination and data collection. The training was carried out by an International Centre for Eye Health (ICEH)-Certified RAAB trainer and covered all survey team members.

The clinical examination team visited study participants in house to house in selected study

[1] Jacqueline Ramke, Anna Palagyi, Thomas Naduvilath, Renee du Toit, Garry Brian; Prevalence and causes of blindness and low vision in Timor-Leste; Br J Ophthalmol 2007;91:1117–1121. doi: 10.1136/bjo.2006.106559

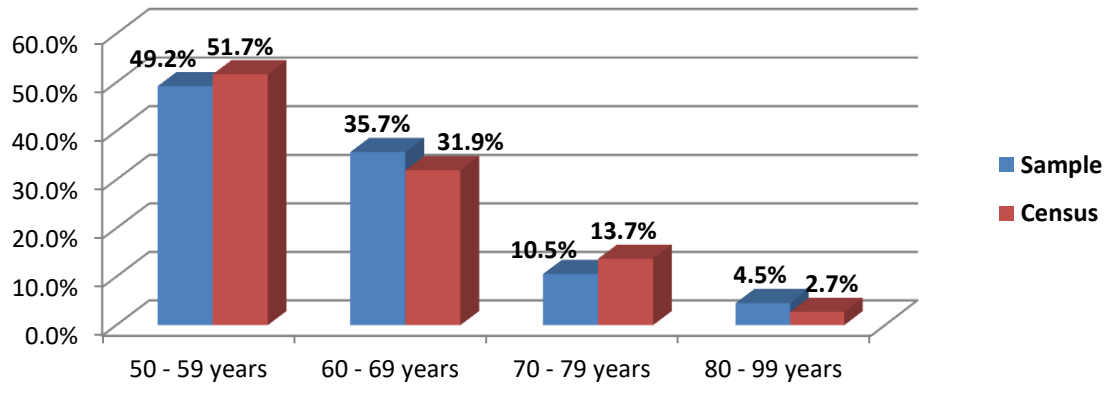
cluster. This meant door-to-door visits for their enrolment, visual acuity measurement and clinical eye examination by the survey teams.

Age and gender distribution of Timor-Leste Census 2010 and study participants shows similar pattern of distribution. However, the older the age group looks more likely to get examined in the survey than that of younger age groups. Therefore, in the survey results these variations were adjusted and presented as age gender adjusted results. Table 1, Figure 1.

Table 1: Description of Survey Population

Population Data: Study population (Sample)						
Age Group	**Males**	**%**	**Females**	**%**	**All**	**%**
50 - 59 years	789	50.0%	812	48.4%	1,601	**49.2%**
60 - 69 years	550	34.9%	611	36.5%	1,161	**35.7%**
70 - 79 years	170	10.8%	173	10.3%	343	**10.5%**
80 - 99 years	68	4.3%	80	4.8%	148	**4.5%**
Total	**1,577**	**100%**	**1,676**	**100.%**	3,253	**100%**
Population Data: Timor-Leste Census 2010						
Age Group	**Males**	**%**	**Females**	**%**	All	**%**
50 - 59 years	29,137	53.8%	28,414	49.7%	57,551	**51.7%**
60 - 69 years	16,543	30.5%	19,034	33.3%	35,577	**31.9%**
70 - 79 years	7,276	13.4%	7,977	13.9%	15,253	**13.7%**
80 - 99 years	1,247	2.3%	1,769	3.1%	3,016	**2.7%**
Total	**54,203**	**100%**	**57,194**	**100%**	1,11,397	**100%**

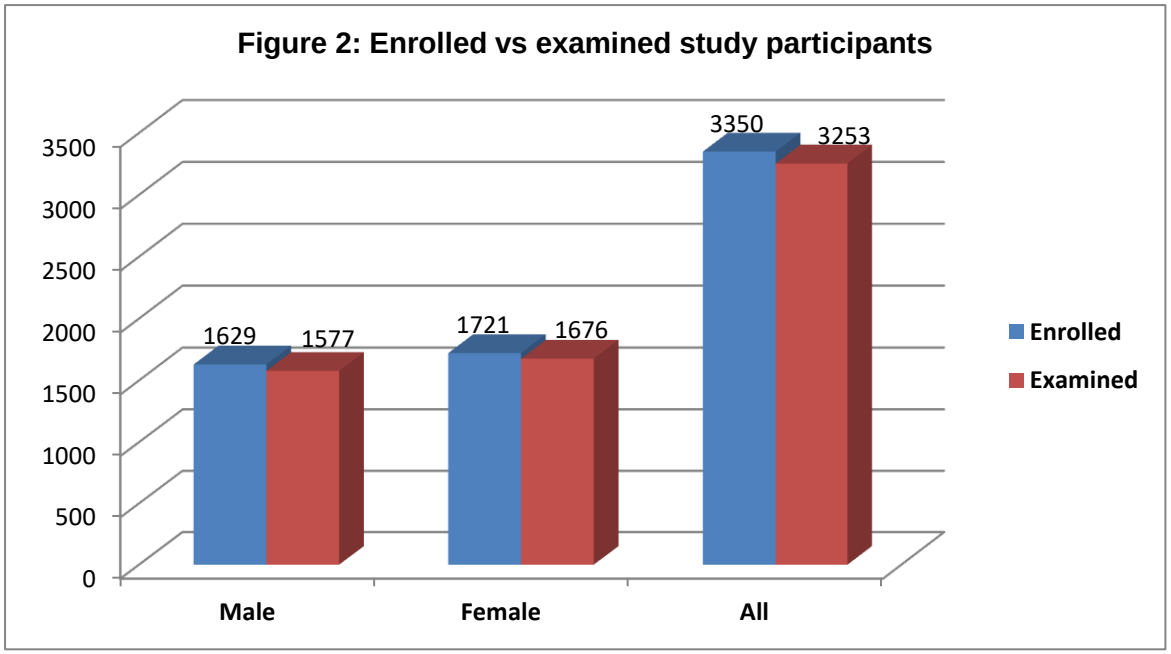
Figure 1: Age and gender distribution census vs study population



Results:

Out of total 3350 enrolled study participants 3253 were available to undergo visual acuity measurement and clinical eye examination with response rate of 97.1% in the survey. Among the examined population 48.5% were male and 51.5% were female. Age and gender distribution of enrolled vs examined people shown in Table 2, Figure 2.

Table 2: Description of enrolled and examined participants				
Study participants	**Enrolled**	**Examined**	**Not available Refusal**	**Response Rate**
Males	1,629	1,577	52	96.8%
Females	1,721	1,676	45	97.4%
All	3,350	3,253	97	97.1%



Timor-Leste Blindness Statistics

Survey overall Response Rate 97.1%

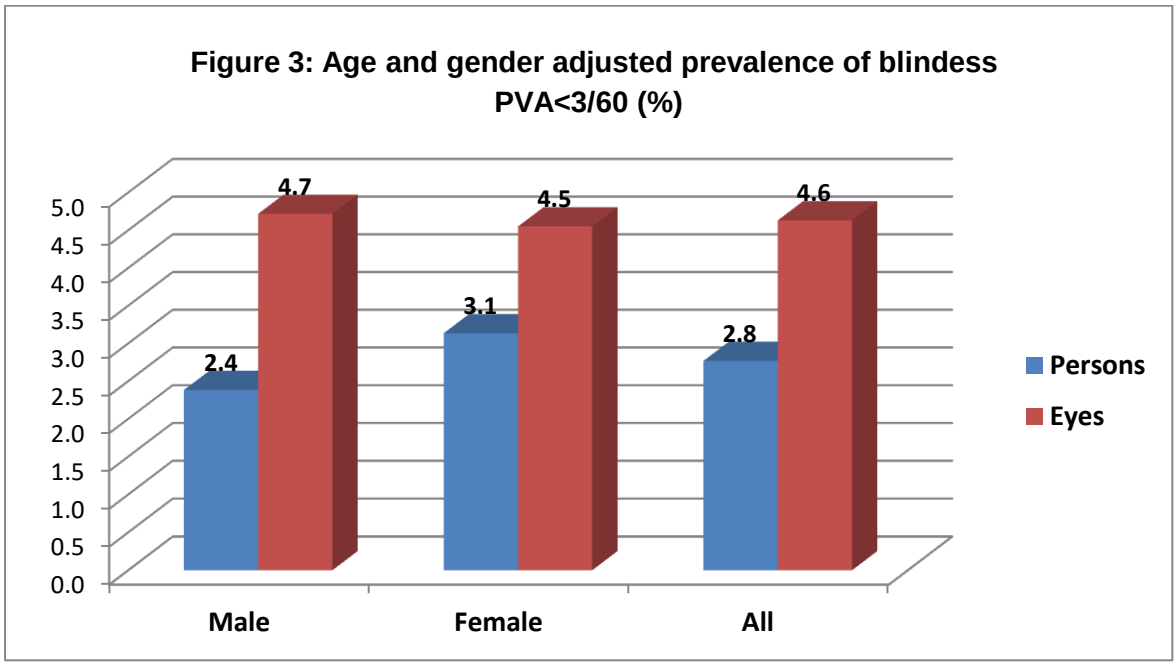
Prevalence of Blindness:

The study revealed overall age and gender adjusted prevalence of blindness presenting visual acuity (PVA) cut off <3/60 as 2.8 % in person and 4.6% among the eyes. The prevalence of blindness among the female was higher at 3.1 % compare to that of male at 2.4%.(Table 3, Figure 3)

Table 3: Age and gender adjusted blindness - PVA < 3/60 in the better eye

Blindness	Male	%	95% CI	Female	%	95% CI	All	%	95 % CI
Persons	1,291	2.4	(1.1-3.6)	1,793	3.1	(2.0-4.3)	3,084	2.8	(1.8-3.8)
Eyes	5,113	4.7	(3.4-6.0)	5,204	4.5	(3.4-5.7)	10,317	4.6	(3.6-5.7)

PVA= Presenting Visual Acuity



Based on PVA <6/60, overall prevalence of severe visual impairment was 4.5 %, (4.0 male and 4.9% female). Table 4, Figure 4. The prevalence of visual impairment PVA <6/18 was 12.5%, (Male 12.0% and Female 13.1%). Comparison of all three categories of visual acuity according to WHO classifications of vision impairment is shown in Table 5, Figure 5.

Timor-Leste Blindness Statistics

Prevalence of Blindness 2.8%, Male 2.4%, Female 3.1%

Table 4: Age and gender adjusted, PVA<6/60 in the better eye									
	Male			Female			All		
	Number	%	95% CI	Number	%	95% CI	All	%	95% CI
Persons	2,148	4.0	(2.5-5.4)	2,816	4.9	(3.4-6.5)	4,964	4.5	(3.2-5.7)
Eyes	7,371	6.8	(5.3-8.3)	7,708	6.7	(5.2-8.3)	15,079	6.8	(5.5-8.1)

Figure 4: Age gender adjusted, PVA <6/60 (%)

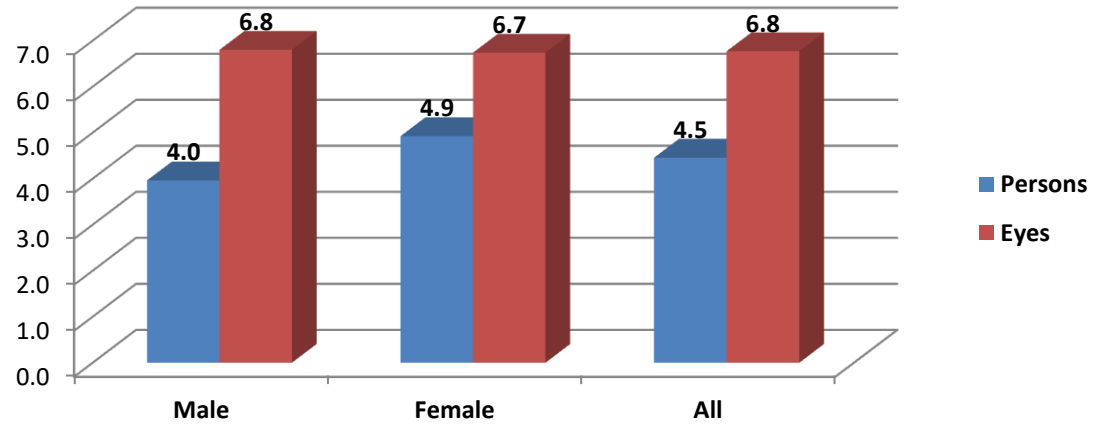
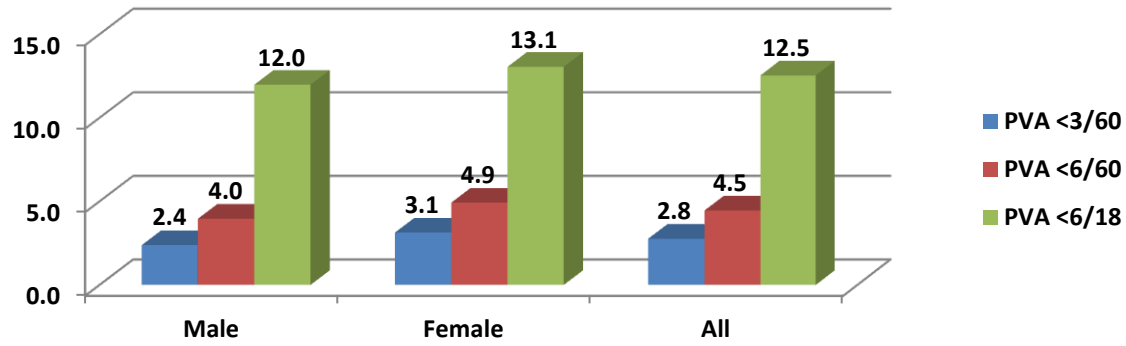


Table 5: Visual Impairment, PVA<6/18 in the better eye, with available correction									
PVA<6/18	Male	%	95% CI	Female	%	95% CI	All	%	95% CI
Person	6,493	12.0	(9.5 - 14.4)	7,465	13.1	(10.7-15.4)	13,958	12.5	(10.5-14.6)
Eyes	17,233	15.9	(13.5-18.3)	18,668	16.3	(13.9-18.8)	35,901	16.1	(14.1-18.1)

Timor-Leste Blindness Statistics

Vision Impairment among 50+ populations 12.5%
Male 12.0%, Female 13.1%

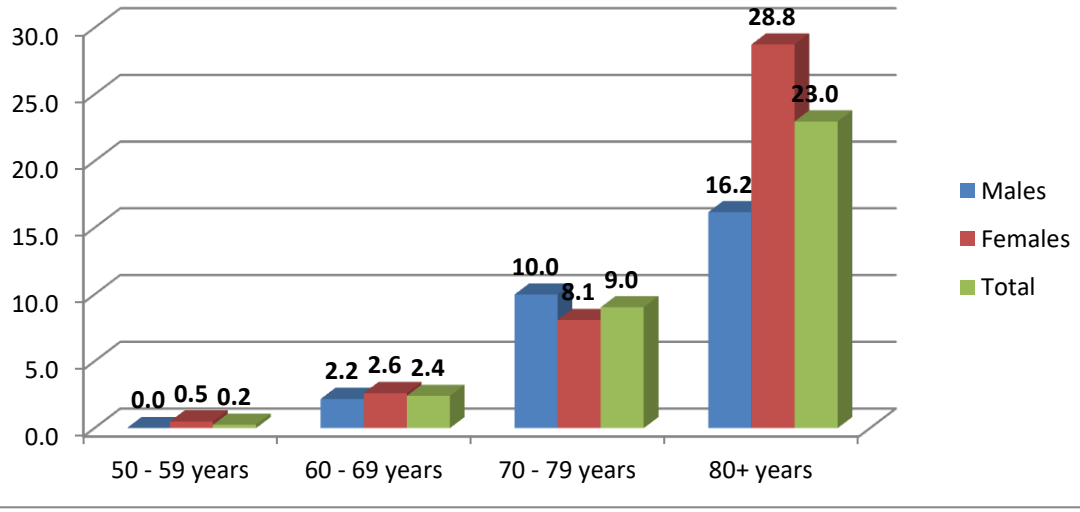
Figure 5: Blindness, severe vision impairment and vision impairment



The crude prevalence of blindness visual acuity <3/60 according age and gender is shown in Table 6, Figure 6. The prevalence of blindness is relatively low in the age group of 50 to 59 and it rapidly increases after 70 years of age in both genders. Table 6, Figure 6.

Table 6: Prevalence of blindness (%) PVA <3/60 according to age and gender			
Age Group	**Males**	**Females**	**All**
50 - 59 years	0.0	0.5	0.2
60 - 69 years	2.2	2.6	2.4
70 - 79 years	10.0	8.1	9.0
80+ years	16.2	28.8	23.0
Total	**2.5**	**3.4**	**3.0**

Figure 6: Prevalence of Blindess according age and gender



Timor-Leste Blindness Statistics

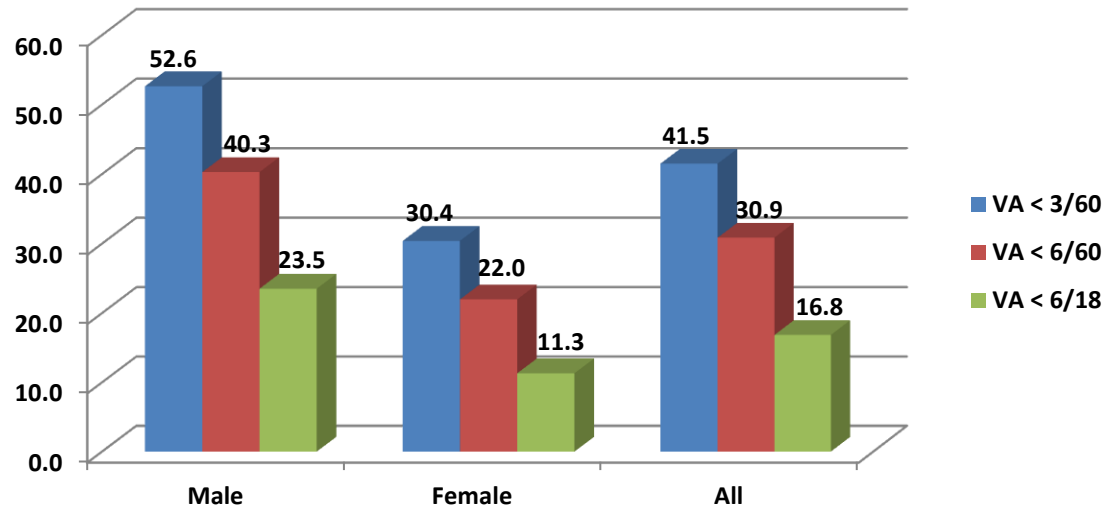
Blindness rate 0.2% among the people of age 50- 60 years and 23.0% among age 80+ years

Cataract Surgical Coverage

Age gender adjusted cataract surgical coverage in Timor is low in both category among the cataract blind persons (48.6 %) and cataract blind eyes (41.5%). The situation is further worse in female gender as 31.3 % and 30.4% in cataract blind person and eyes respectively. Table 7, Figure 7 and 8.

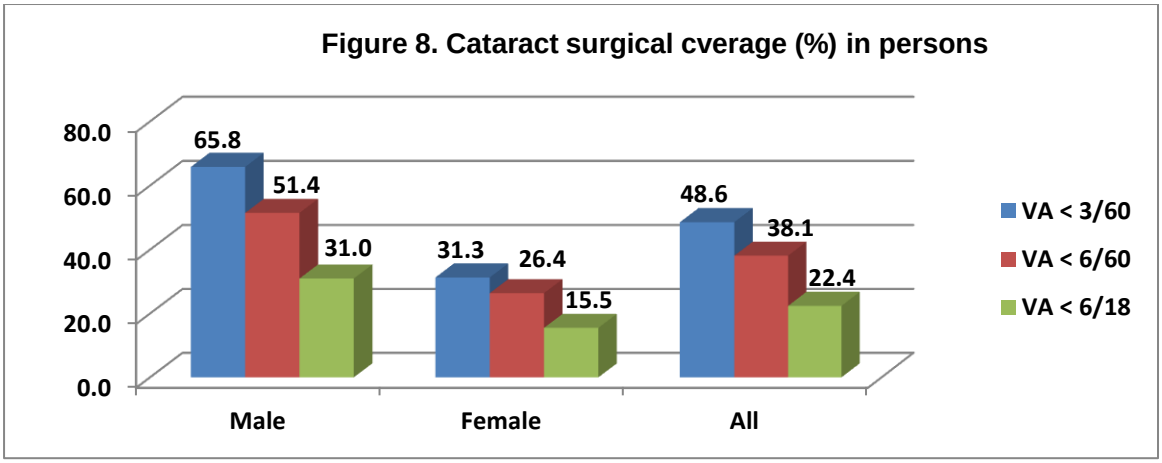
Table 7: Age and gender adjusted cataract surgical coverage (%)			
Cataract Surgical Coverage (eyes) - percentage			
Visual acuity	**Male**	**Female**	**All**
VA < 3/60	52.6	30.4	41.5
VA < 6/60	40.3	22.0	30.9
VA < 6/18	23.5	11.3	16.8
Cataract Surgical Coverage (persons) - percentage			
Visual acuity	**Male**	**Female**	**All**
VA < 3/60	65.8	31.3	48.6
VA < 6/60	51.4	26.4	38.1
VA < 6/18	31.0	15.5	22.4
Effective Cataract Surgical Coverage (eCSC) person - percentage			
VA < 3/60	45.9	24.2	35.0
VA < 6/60	35.8	19.6	27.2
VA < 6/18	20.3	11.0	15.2

Figure 7: Cataract surgical coverage (%) in eyes



Timor-Leste Blindness Statistics

Cataract Surgical Coverage among Cataract Blind Persons
Male 65.8% and Female 31.3%



Cataract is the leading cause of blindness globally and same is also true in Timor-Leste. The study found that in addition to the low cataract surgical coverage, the surgical outcome was not meeting WHO standard. Overall all good visual outcome of cataract surgery was found only in 62.0% of people; borderline and poor outcome was seen in 22.6 and 15.3% people respectively.

WHO Guidelines for visual outcome of cataract Surgery: Good Outcome: Visual Acuity ≥ 6/18, Borderline Outcome: Visual Acuity <6/18 to 6/60, Poor Outcome: Visual Acuity <6/60

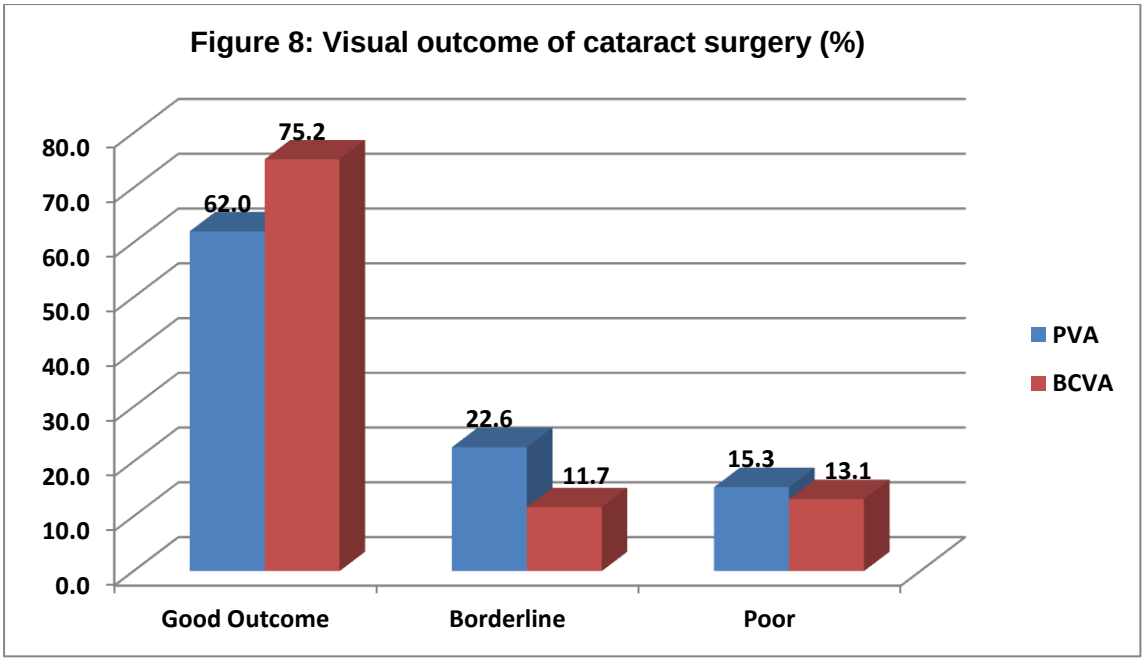
Table 8: Visual Outcome of cataract Surgery

Visual outcome among the cataract operated eyes PVA						
Outcome	**Non-IOL**		**IOL**		**All**	
	Eyes	**%**	**Eyes**	**%**	**Eyes**	**%**
Good Outcome	2	66.7	83	61.9	**85**	**62.0**
Borderline	0	0.0	31	23.1	**31**	**22.6**
Poor	1	33.3	20	14.9	**21**	**15.3**
Total	**3**	**100.0**	**134**	**100.0**	**137**	**100.0**
PVA: Presenting Visual Acuity						

Visual Outcome among the cataract operated eyes BCVA						
Outcome	**Non-IOL**		**IOL**		**All**	
	Eyes	**%**	**Eyes**	**%**	**Eyes**	**%**
Good Outcome	2	66.7	101	75.4	103	**75.2**
Borderline	0	0.0	16	11.9	16	**11.7**
Poor	1	33.3	17	12.7	18	**13.1**
Total	**3**	**100**	**134**	**100**	**137**	**100**
BCVA: Best Corrected Visual Acuity						

Timor-Leste Blindness Statistics

Good visual outcome of cataract surgery
62% and 75.2 % presenting and best corrected visual acuity respectively



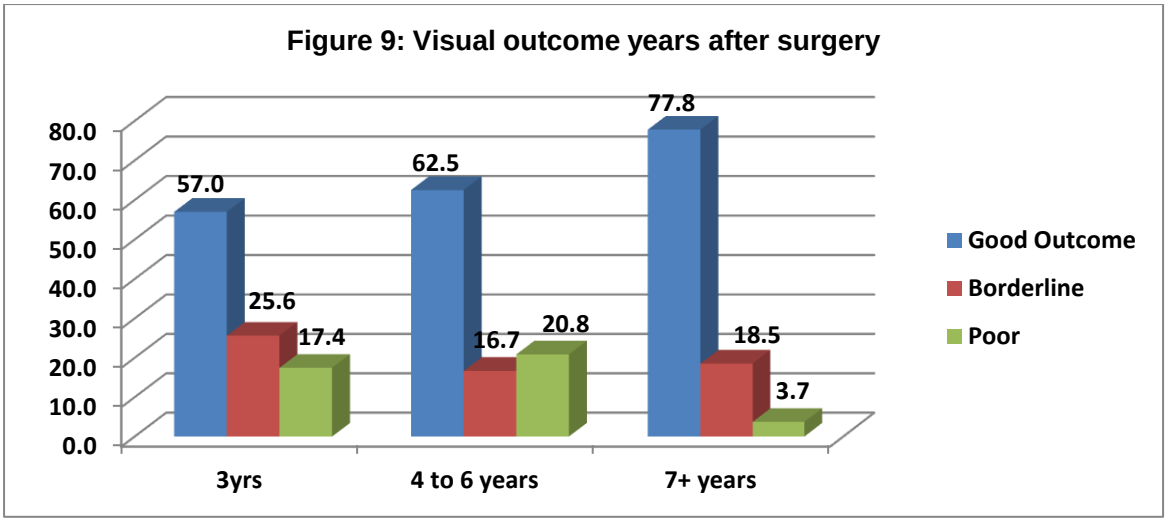
The survey revealed that visual outcome of cataract surgery has not improved in recent years despite advancement of technology in cataract surgical procedures. In fact, the 'good outcome' has declined from 77.8 % 7 years ago to 57% in recent years (Table 9, Figure 9)

Table 9 : Visual outcome in operated eyes by years after surgery

	< 3 years		4 - 6 years		7+ years		All	
Visual Outcome	**Eyes**	**%**	**Eyes**	**%**	**Eyes**	**%**	**Eyes**	**%**
Good Outcome	49	57.0	15	62.5	21	77.8	85	**62.0**
Borderline	22	25.6	4	16.7	5	18.5	31	**22.6**
Poor	15	17.4	5	20.8	1	3.7	21	**15.3**
Total	**86**	**100**	**24**	**100**	**27**	**100**	**137**	**100.0**

Timor-Leste Blindness Statistics

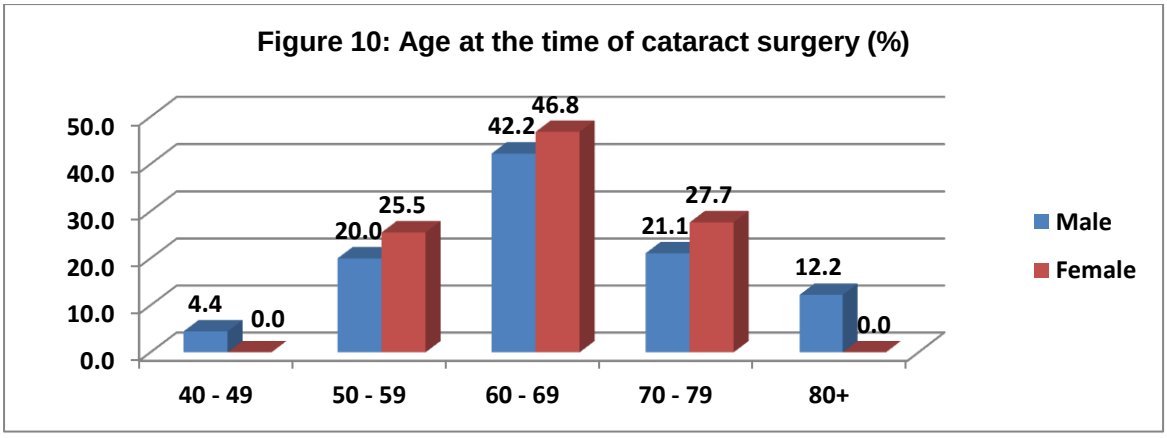
Good visual outcome among the cataract operated eyes 7 years ago was 77.8%, among the eyes operated <3 years ago was 57.0%.



The most common age of cataract surgery done in Timorese population is in the age group of 60 – 69 years, this account for 43.8% of cataract surgery. Only 2.9% cataract surgeries were done at age 50 years or below. Table 10 Figure 10.

Table 10: Age at time of cataract surgery according to gender

	Males		Females		All	
Age Group	Eyes	%	Eyes	%	Eyes	%
40 - 49	4	4.4	0	0.0	4	**2.9**
50 - 59	18	20.0	12	25.5	30	**21.9**
60 - 69	38	42.2	22	46.8	60	**43.8**
70 - 79	19	21.1	13	27.7	32	**23.4**
80+	11	12.2	0	0.0	11	**8.0**
Total	**90**	**100**	**47**	**100**	**137**	**100**



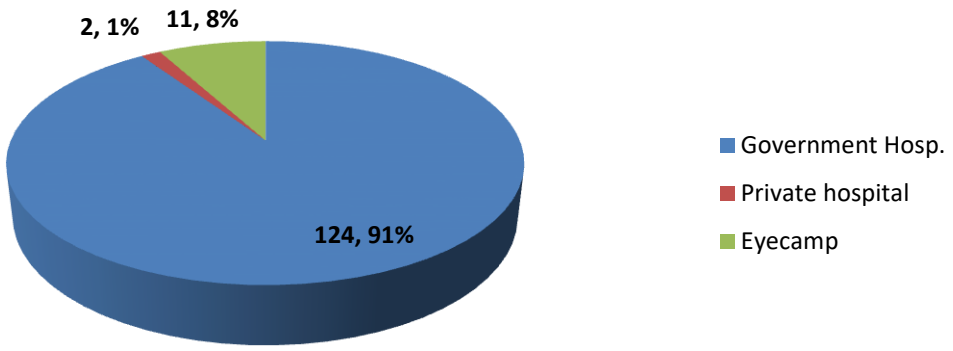
Most of the cataract surgery (90.5%) was performed in Government hospital in Dili. Some were operated in Outreach eye camp (8.0%) and 1.5% were operated in private setups outside the country.

Timor-Leste Blindness Statistics

Mean age of cataract surgery 60 – 69 years old

Table 11: Location of surgery by gender						
	Males		Females		All	
Location	**Eyes**	**%**	**Eyes**	**%**	**Eyes**	**%**
Government Hosp.	82	91.1	42	89.4	**124**	**90.5**
Private hospital	0	0.0	2	4.3	**2**	**1.5**
Eye camp	8	8.9	3	6.4	**11**	**8.0**
Total	**90**	**100**	**47**	**100**	**137**	**100**

Figure 11: Cataract Operated eyes according to location (n=137)



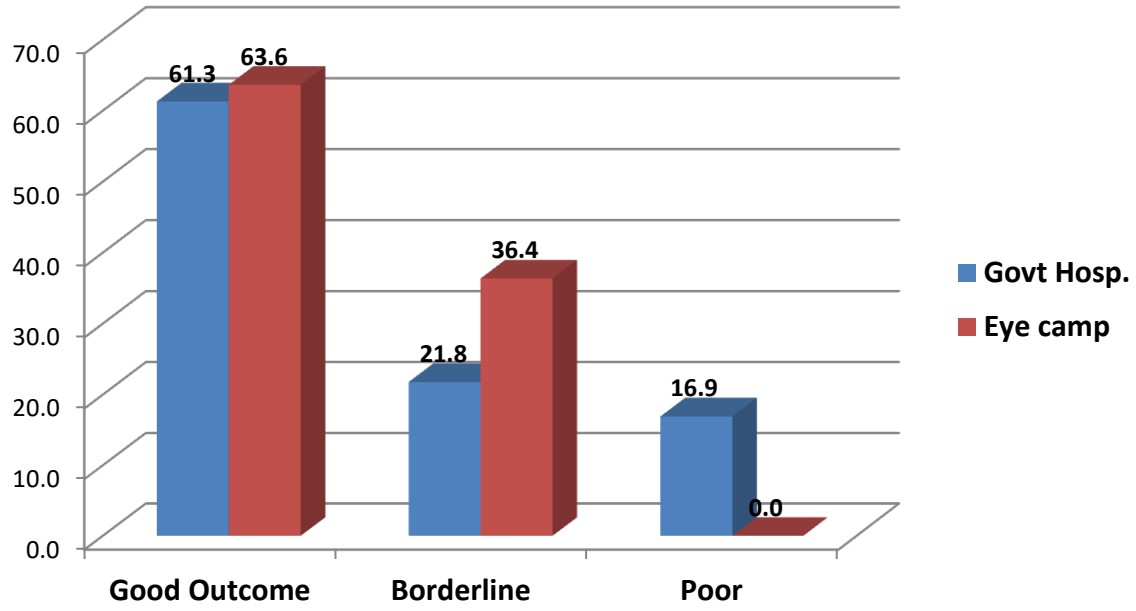
There is no significant difference in visual outcome following cataract surgery among the patient operated in Hospital or in eye camps. In either situation over 60% operated people had good visual outcome. More than one third (36.4%) of cataract surgery done in eye camp had borderline visual outcome. Table 12, Figure 12.

Table 12: Visual outcome (PVA) by place of surgery								
	Gov. Hosp.		Private		Eye Camp		All	
Visual Outcome	**Eyes**	**%**	**Eyes**	**%**	**Eyes**	**%**	**Eyes**	**%**
Good Outcome	76	61.3	2	100	7	63.6	85	62.0
Borderline	27	21.8	0	0	4	36.4	31	22.6
Poor	21	16.9	0	0	0	0.0	21	15.3
Total	**124**	**100**	**2**	**100**	**11**	**100**	**137**	**100**

Timor-Leste Blindness Statistics

Cataract surgery performed 91% in hospital and 8% in eye camp setting

Figure 12: Visual outcome of cataract Surgery according location of Surgery



More than half (52.4%) of the poor outcome in cataract surgery was related to long term complication of cataract surgery such as posterior capsule opacification (PCO),retinal detachment etc. and one third (33.3%) were due to surgical complications. Among the borderline visual outcome 45.2% were due to uncorrected refractive error and 38.7% were due to long term complication of cataract surgery. Table 13, Figure 13.

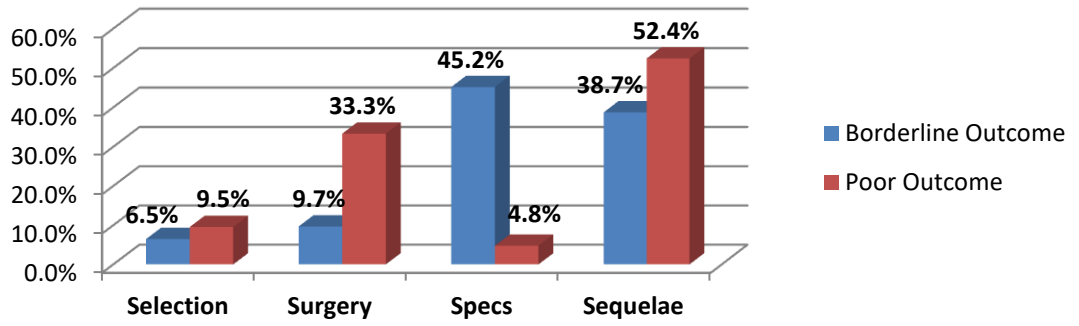
Table 13: Post-op presenting visual acuity and causes of borderline and poor outcome

	Ocular comorbidity		Surgical complication		Refractive Error		Long term complication	
Visual Outcome	**Eyes**	**%**	**Eyes**	**%**	**Eyes**	**%**	**Eyes**	**%**
Borderline Outcome	2	6.5%	3	9.70%	14	45.2%	12	38.7%
Poor Outcome	2	9.5%	7	33.3%	1	4.8%	11	52.4%
Total	**4**	2.9%	**10**	7.3%	**15**	10.9%	**23**	16.8%

Timor-Leste Blindness Statistics

Caused for poor outcome of cataract surgery 52.4% long-term complication and 33.3% related to surgical complications

Figure 13: Causes of borderline and poor outcome (n=52)



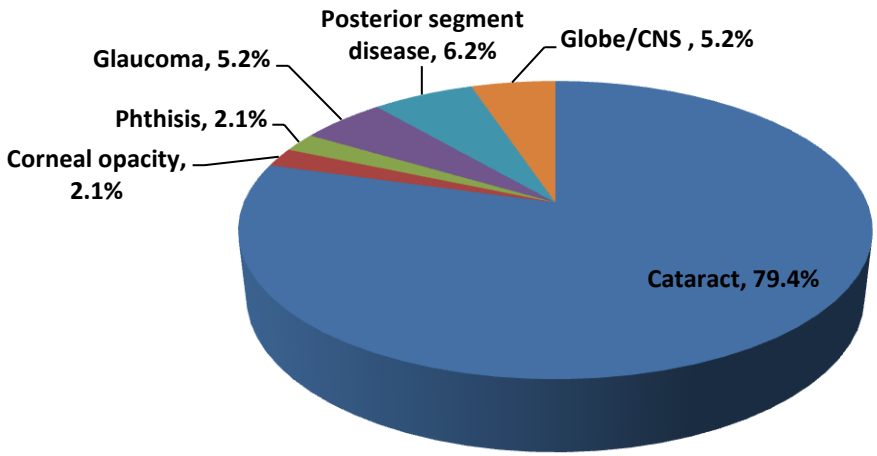
Cause of Blindness

As other developing countries in the region, cataract was the leading cause of blindness in Timor-Leste (79.4% of overall blindness). Other major causes of blindness were posterior segment problem (6.2%), glaucoma and globe anomalies (5.2% each).Table 14, Figure 14.

Table 14: Principal cause of blindness in persons: VA<3/60 in better eye with available correction

Cause of Blindness	Males		Females		All	
Cause of Blindness	No.	Male	No.	Female	No.	All
Cataract	28	70.0%	49	86.0%	**77**	**79.4%**
Corneal opacity	2	5.0%	0	0.0%	**2**	**2.1%**
Phthisis	0	0.0%	2	3.5%	**2**	**2.1%**
Glaucoma	4	10.0%	1	1.8%	**5**	**5.2%**
Posterior segment disease	5	12.5%	1	1.8%	**6**	**6.2%**
Globe/CNS	1	2.5%	4	7.0%	**5**	**5.2%**
Total	**40**	**100%**	**57**	**100%**	**97**	**100%**

Figure 14: Causes of Blindness in person PVA <3/60 in better eye



Timor-Leste Blindness Statistics

Causes of Blindness: Cataract 79.4% , Posterior segment 6.2%, Glaucoma 5.2%

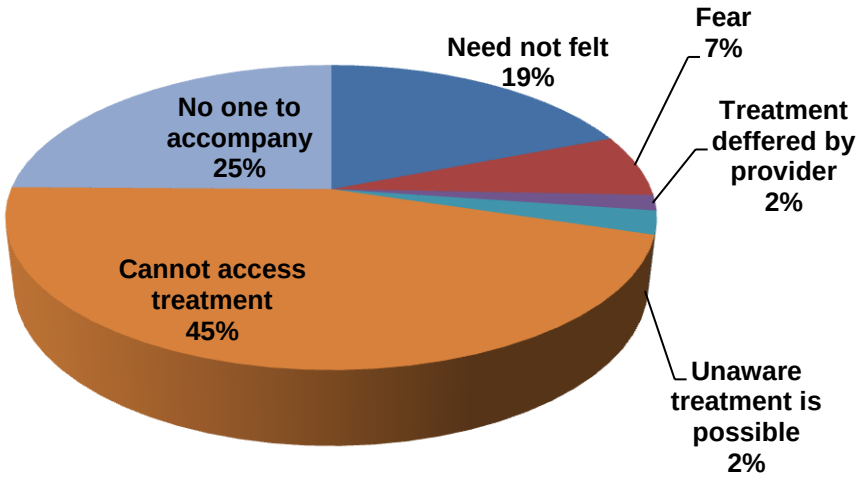
Barriers to uptake available cataract surgical services

All eye health services in Timor-Leste is free of cost for the patient, therefore financial barrier as cost of surgery was not directly attributing to un-operated cataract causing visual impairment or blindness. However, accessibility to service and lack of attendant were the main barriers at 45.5% and 24.8% respectively. Table 15, Figure 15.

Table 15: Barriers to cataract surgery (bilateral BCVA<6/60 due to cataract)

	Males		Females		All	
Barriers	n	%	n	%	n	%
Need not felt	7	15.2	16	21.3	23	19.0
Fear	5	10.9	3	4.0	8	6.6
Cost	0	0.0	0	0.0	0	0.0
Treatment differed by provider	2	4.3	0	0.0	2	1.7
Unaware treatment is possible	1	2.2	2	2.7	3	2.5
Cannot access treatment	19	41.3	36	48.0	55	45.5
No one to accompany	12	26.1	18	24.0	30	24.8
Total	**46**	**100**	**75**	**100**	**121**	**100**

Figure 15: Prominent barriers to uptake cataract surgery among biateral cataract (VA better eye <6/60)



Timor-Leste Blindness Statistics

Accessibility to the service 45.5%, lack of attendant 24.8% are major barriers to uptake available cataract surgical services in the country.

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