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BACKGROUND

- An estimated 831 million people suffer from avoidable blindness and vision impairment¹, 90% of which live in developing countries.
- The delivery of eye care services in these countries is seriously hindered due to inadequate financial and physical resources and a lack of trained eye care personnel.
- The training of competent mid-level eye care personnel is one of the priorities of *VISION 2020: The Right to Sight* to address avoidable blindness².
- One-year trained vision technicians provide primary eye care services within LV Prasad Eye Institute's (LVPEI) eye care delivery model³ (Fig1).



Figure 1: The LV Prasad Eye Care Delivery Model⁴ (Reprinted with permission).

AIM

- To evaluate the disease detection ability, refraction ability, job confidence and satisfaction of one-year trained vision technicians.

METHODS

- Study conducted at LVPEI's Bhubaneswar site, in Orissa State, India.
- Three vision technicians and three optometrists were each given 10 randomly selected hospital patients to examine.
- Disease detection ability evaluated against ophthalmologist findings.
- Refraction ability evaluated against cycloplegic autorefraction readings.
- Job confidence and satisfaction questionnaires completed by 23 vision technicians and 26 optometrists.
- Ethics approval acquired from all participating institutions.

RESULTS

- Agreement between subjective refraction and autorefraction
 - For spherical equivalent : ± 0.78 D for optometrists and ± 0.90 D for vision technicians
 - For cylindrical components: agreement for both within ± 0.50 D (Table 1).
- Vision technicians found as confident as optometrists in all areas of the eye examination, except in performing ophthalmoscopy and posterior segment disease detection (Table 2).

RESULTS

Table 1: Summary of mean, standard deviation and 95% limits of agreement of refraction readings.

	Vision Technicians				Optometrists			
	Mean	S.D.	Limits of agreement Mean - 1.96*SD	Mean + 1.96*SD	Mean	S.D.	Limits of agreement Mean - 1.96*SD	Mean + 1.96*SD
Retinoscopy vs Autorefraction								
M	0.51	0.85	-1.15	2.1	0.0004	0.67	-1.31	1.31
J ₀	0.02	0.21	-0.39	0.43	-0.42	0.25	-0.91	0.07
J ₄₅	0.03	0.16	-0.28	0.34	-0.05	0.24	-0.52	0.42
Subjective vs Autorefraction								
M	0.001	0.46	-0.9	0.9	-0.19	0.4	-0.97	0.59
J ₀	0.01	0.19	-0.36	0.38	-0.04	0.25	-0.53	0.45
J ₄₅	0.005	0.15	-0.28	0.3	-0.05	0.22	-0.48	0.38

M=Spherical Equivalent J₀= Cylinder at Axis 0° J₄₅= Cylinder at Axis 45°

Table 2: Self-evaluated job confidence scores for direct ophthalmoscopy and posterior segment abnormality, in which VTs were not as competent as optometrists. For comparison, scores of other two procedures which show equal competence are listed.

Procedure/ Action	Poor %	Vision Technicians			Confident %	Poor %	Optometrists		
		Ok %	Good %	Confident %			Ok %	Good %	Confident %
Direct ophthalmoscopy	13	30	48	9	0	27	35	38	
Detection of anterior segment abnormality	0	9	35	56	0	8	27	65	
Detection of posterior segment abnormality	22	36	25	17	15	23	39	23	
Making a correct diagnosis of diseases	0	30	44	26	4	15	58	23	

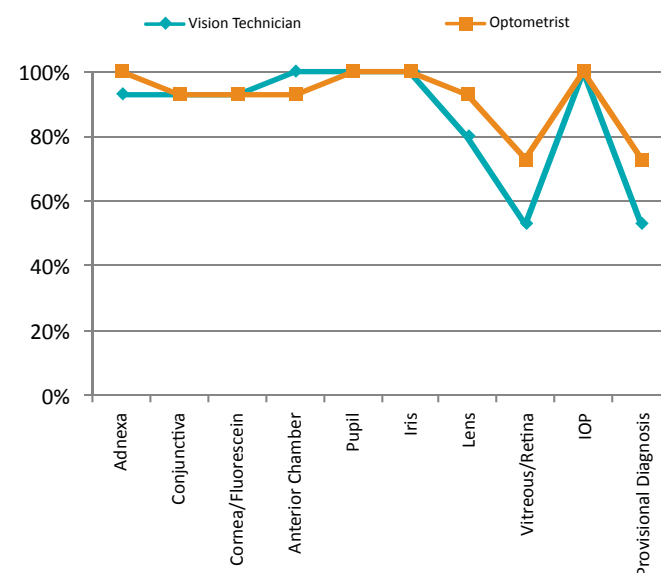


Figure 2: Accuracy in clinical ocular findings by vision technicians and optometrists.

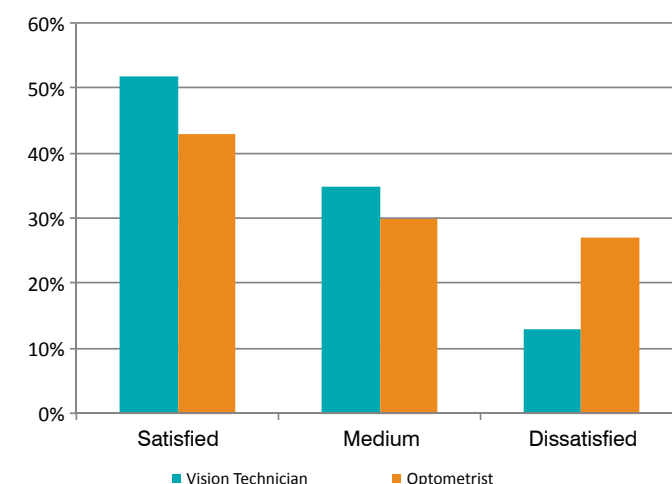


Figure 3: Job satisfaction levels of vision technicians and optometrists.

DISCUSSION

- Vision technicians are competent to refract and detect anterior segment diseases.
- They are not as competent as optometrists in posterior segment disease detection, possibly due to insufficient exposure to these conditions during their training.
- Vision technicians are likely to be retained in vision centres due to higher job confidence and satisfaction levels.
- If provided with appropriate training and exposure to certain clinical skills, vision technicians are a suitable cadre to provide quality eye care in developing communities.

CONCLUSION

Vision technicians are competent to provide primary eye care services in rural and developing communities.

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