



CLUSTER RANDOMIZED CONTROLLED TRIAL OF CERVICAL VISUAL SCREENING IN RURAL SOUTH INDIA

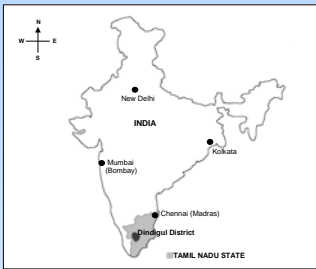
R. SANKARANARAYANAN¹, P.O. ESMY², R. SWAMINATHAN⁴, R. RAJKUMAR^{2,3}, A. KUMAR², S. SHANTAKUMARI³, S. THARA,
E. LUCAS¹, J.M. FAYETTE¹, R. MUWONGE¹, L. FRAPPART⁵, J. CHERIAN²

¹ International Agency for Research on Cancer, (WHO-IARC); ⁵ Hôpital Edouard Herriot, Lyon, France
² Christian Fellowship Community Health Center (CFCHC), Ambillikai; ³ PSG Institute of Medical Science and Research,
Coimbatore; ⁴ Cancer Institute (WIA), Chennai, India

Background

The impact of a single round of screening with visual inspection with acetic acid (VIA) on cervical cancer incidence and mortality is being investigated in a cluster randomized controlled trial in South India. Women aged 30-59 years in 113 clusters in Dindigul District were randomized to VIA screening (57 clusters, 48,225 women) by nurses and to a control group (56 clusters, 30,167 women). 30,577 eligible women were screened between May 2000 and April 2003. Screen-positive women were investigated with colposcopy/biopsy. Women with cervical intraepithelial neoplasia (CIN) were treated with cryotherapy or loop electrosurgical excision procedure (LEEP) and the invasive cancer cases were treated at the base hospital (CFCHC). Data on participation, test positivity, CIN detection and treatment rates were analyzed. The preliminary findings after the screening phase are reported here.

Study location-Dindigul District, India



Notional Map Showing Dindigul District, Tamil Nadu State, India

Objectives

Primary: To evaluate

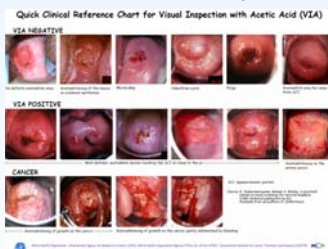
- the reduction in cervical cancer incidence and mortality associated with a single round of screening with VIA as compared to a control group with no screening;
- the cost-effectiveness (CE) of VIA screening.

Secondary: To evaluate

- Determinants of participation for screening/diagnosis/treatment;
- Over-treatment associated with treatment decisions based on colposcopy;
- Safety and effectiveness of cryotherapy by nurses under field conditions;
- Safety and effectiveness of LEEP by mid-level clinicians.

Definition of screen positivity

- VIA: Well-defined acetowhite lesions close to the squamocolumnar junction or the external os or on a cervical growth



Field procedures



Health education by drama and puppet show

Field procedures (continued)

- Enumeration of all women and listing of eligible women (30-59 years);
- Interview and informed consent of eligible women;
- Educational programmes and preparation for screening clinics;
- Screening in village clinics;
- Colposcopy and biopsy for screen-positive women, under the supervision of the medical officer;
- Treatment with cryotherapy by nurses after obtaining a biopsy under the supervision of the medical officer;
- Clinical follow-up of treated women.



Procedures at the CFCHC



- Data management
- Treatment of CIN with LEEP and invasive cancer by surgery/radiotherapy

Control Arm



- Eligible women were:
- enumerated and interviewed;
 - informed about cervical cancer symptoms, signs and treatment options;
 - informed of how to avail of diagnosis and treatment of cervical neoplasia at CFCHC and other hospitals;
 - offered free screening and treatment at CFCHC

Evaluation

Process measures

- Coverage per screening, investigations and treatment.

Intermediate outcome measures

- Detection rates of CIN and cancer;
- Stage distribution of cervical cancer;
- Case fatality and survival from cervical cancer.

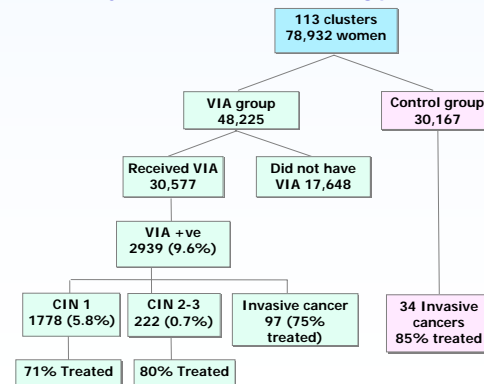
Final endpoint

- Reduction in incidence of and mortality from cervical cancer.

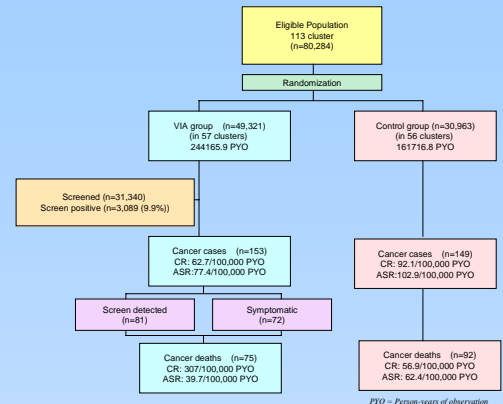
Follow-up - active and passive methods

- Linkage with population-based cancer registry and death registers;
- Active enumeration of participants by house visits for information on changes in family circumstances/health.

Preliminary results after the screening phase



Follow-up results after the screening phase



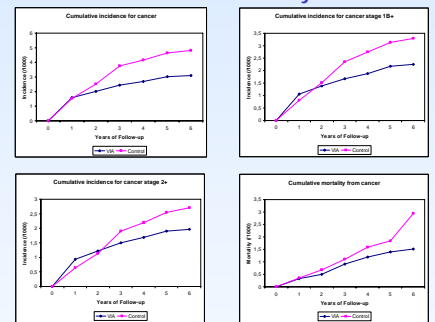
Relative hazard adjusted for age, parity, cluster design

Group	End point	Relative hazard (95% CI) for end point
Control		1.00 (reference)
VIA	Cervical cancer incidence	0.70 (0.54-0.90)
	Stage 1B+	0.74 (0.55-0.99)
	Stage 2+	0.78 (0.58-1.06)
	Cervical cancer death	0.58 (0.41-0.81)

Age-specific relative hazard adjusted for parity, cluster design

Group	End point	Age Group		
		30-39	40-49	50-59
Control		1.00 (reference)	1.00 (reference)	1.00 (reference)
VIA	Incidence	0.49 (0.33-0.74)	0.85 (0.54-1.32)	0.75 (0.49-1.16)
	Stage 1B+	0.53 (0.32-0.87)	0.80 (0.48-1.33)	0.87 (0.53-1.43)
	Stage 2+	0.48 (0.28-0.84)	0.91 (0.52-1.57)	0.97 (0.57-1.64)
	Death	0.31 (0.17-0.55)	0.56 (0.32-1.00)	0.88 (0.52-1.48)

Cumulative incidence and mortality



Conclusions

- With age, prevalence of cancers at screening increased and that of CIN 1 decreased;
- VIA detected large numbers of prevalent cancers, with rates 3 times higher than the expected incidence in the absence of screening;
- 20% of the cancers detected at early stage were in the VIA group and none in the control group;
- With an average of 4.95 and 5.22 years of follow-up in the VIA and control groups, respectively cervical cancer incidence and mortality rates were lower in the VIA compared to the control group;
- A significant reduction of 30% in incidence and 42% in mortality has been observed in the intervention group.

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