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Community Based Cancer Screening – The 12 “ I ”s Strategy for Success*

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1. Introduction

Background of the study, in which the Editor has served as the Investigator at source 1.

Cluster Randomized Controlled Trial of Visual Screening for Cervical Cancer in Dindigul District, Tamil Nadu, India

Supported by the Bill & Melinda Gates Foundation through the Alliance for Cervical Cancer Prevention (ACCP)

Collaborators:

1. Christian Fellowship Community Health Centre (CFCHC), Ambillikai, India
2. Cancer Institute (WIA), Chennai (Madras), India
3. PSG Institute of Medical Sciences and Research (PSGIMSR), Coimbatore, India
4. World Health Organization-International Agency for Research Cancer (WHO-IARC), Lyon, France

A community based screening program was planned and the editor used the following strategies which ensured success:

The 12 “ I ”s Strategy

“Our experience in a Community Based Cervical Cancer Screening Programme and the strategies which helped us to be successful”

The 12 “ I ” s

1. **INITIATION**
2. **INFERENCE**
3. **IMBIBE**
4. **INSTALL**
5. **INSPIRE**
6. **INVOLVEMENT**

* Experience and Evidence Based Recommendations for Health Care planners especially in developing countries who undertake Cervical Cancer Screening projects in limited resource settings

7. INVITE
8. INSURE
9. INDIGENOUS
10. INSTITUTE
11. ILLUSTRATE
12. IMPROVE

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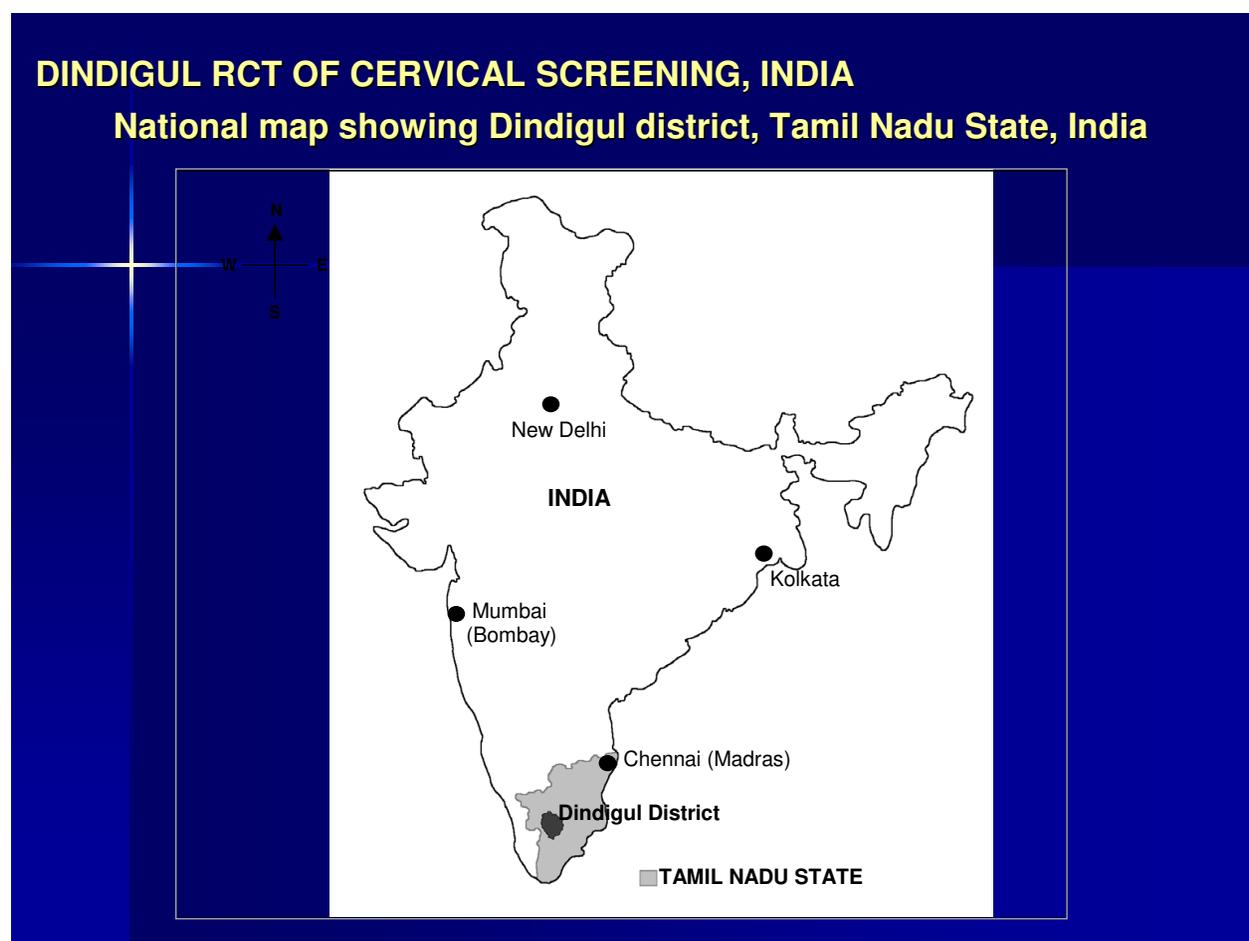


Fig. 1. Geographical location of the study area

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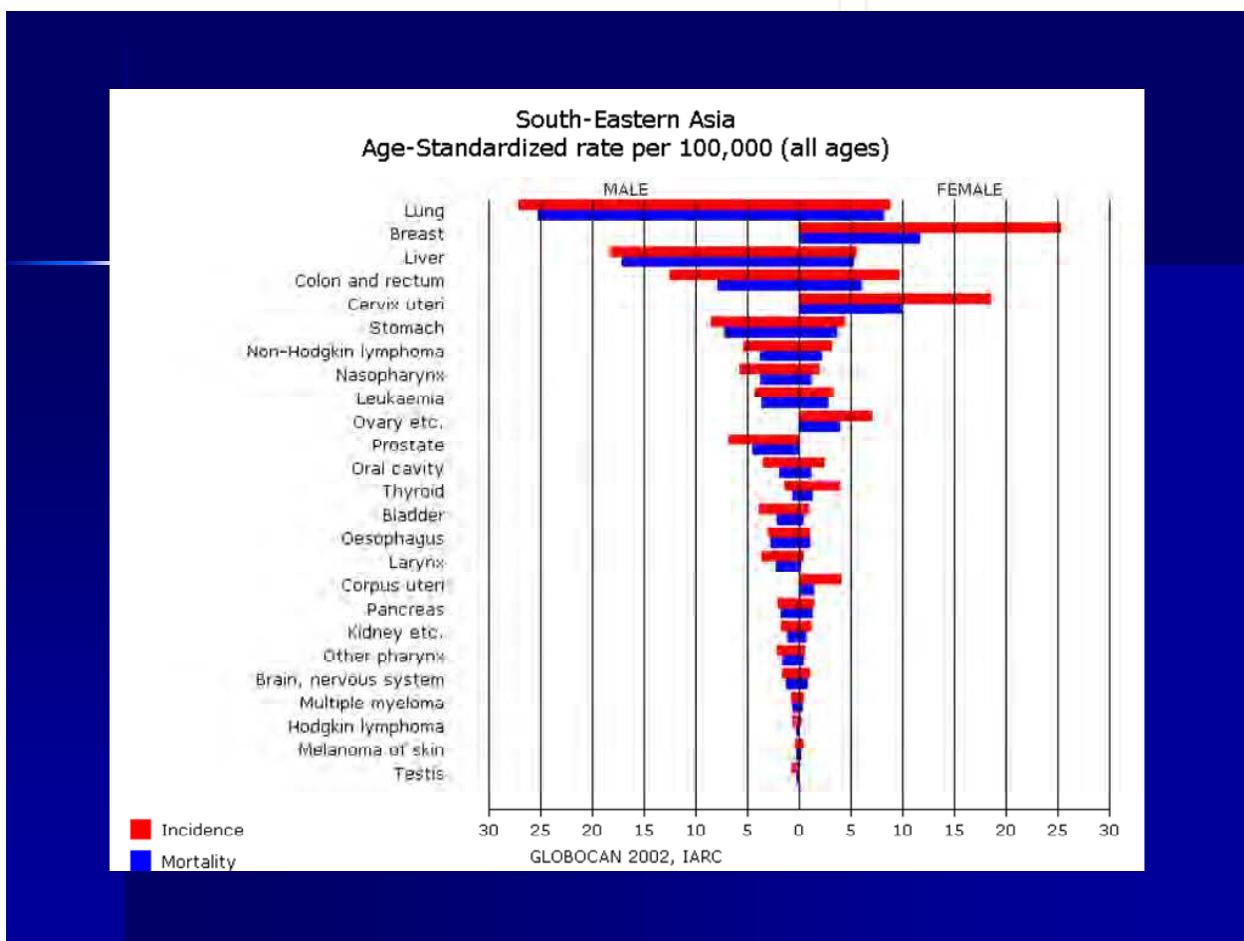


Table 1. Cancer Incidence in SE Asia: The need for screening is based on the following tables, showing high incidence of cervical cancer

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| SITE | World - Females | | | | | | | | |
|---------------------------------|---------------------|-------------|-------------|---------------|------------|------------|---------------------|----------------|------------------|
| | Incidence | | | Mortality | | | Prevalence | | ICD-10 |
| | Cases | Crude Rate | ASR(W) | Deaths | Crude Rate | ASR(W) | 1-year | 5-year | |
| Oral cavity | 98373 | 3.2 | 3.2 | 46723 | 1.5 | 1.5 | 75769 | 273356 | C00-C08 |
| Nasopharynx | 24247 | 0.8 | 0.8 | 15419 | 0.5 | 0.5 | 17786 | 63235 | C11 |
| Other pharynx | 24077 | 0.8 | 0.8 | 16029 | 0.5 | 0.5 | 16630 | 52905 | C09-C10, C12-C14 |
| Esophagus | 146723 | 4.8 | 4.7 | 124730 | 4.1 | 3.9 | 54159 | 129394 | C15 |
| Stomach | 330518 | 10.7 | 10.4 | 254297 | 8.3 | 7.9 | 166436 | 522156 | C16 |
| Colon and rectum | 472687 | 15.4 | 14.6 | 250532 | 8.1 | 7.6 | 362911 | 1315195 | C18-C21 |
| Liver | 184043 | 6.0 | 5.8 | 181439 | 5.9 | 5.7 | 46521 | 111446 | C22 |
| Pancreas | 107465 | 3.5 | 3.3 | 107479 | 3.5 | 3.3 | 26002 | 66596 | C25 |
| Larynx | 20011 | 0.7 | 0.6 | 11327 | 0.4 | 0.4 | 15463 | 57944 | C32 |
| Lung | 386891 | 12.6 | 12.1 | 330786 | 10.7 | 10.3 | 162377 | 423467 | C33-C34 |
| Melanoma of skin | 81134 | 2.6 | 2.6 | 18829 | 0.6 | 0.6 | 75940 | 332953 | C43 |
| Breast | 115129 ₈ | 37.4 | 37.4 | 410712 | 13.3 | 13.2 | 106004 ₂ | 4406080 | C50 |
| Cervix uteri | 493243 | 16.0 | 16.2 | 273505 | 8.9 | 9.0 | 381033 | 1409265 | C53 |
| Corpus uteri | 198783 | 6.5 | 6.5 | 50327 | 1.6 | 1.6 | 183528 | 775542 | C54 |
| Ovary etc. | 204499 | 6.6 | 6.6 | 124860 | 4.1 | 4.0 | 153761 | 538499 | C56, C57.0-4 |
| Kidney etc. | 79257 | 2.6 | 2.5 | 39199 | 1.3 | 1.2 | 57234 | 223235 | C64-C66, C68 |
| Bladder | 82699 | 2.7 | 2.5 | 36699 | 1.2 | 1.1 | 64673 | 249966 | C67 |
| Brain, nervous system | 81264 | 2.6 | 2.6 | 61616 | 2.0 | 2.0 | 37721 | 118861 | C70-C72 |
| Thyroid | 103589 | 3.4 | 3.3 | 24078 | 0.8 | 0.8 | 89315 | 394698 | C73 |
| Non-Hodgkin lymphoma | 125448 | 4.1 | 4.0 | 72955 | 2.4 | 2.3 | 86221 | 324184 | C82-C85, C96 |
| Hodgkin lymphoma | 24111 | 0.8 | 0.8 | 8352 | 0.3 | 0.3 | 20178 | 87449 | C81 |
| Multiple myeloma | 39192 | 1.3 | 1.2 | 29839 | 1.0 | 0.9 | 27925 | 84521 | C90 |
| Leukaemia | 129485 | 4.2 | 4.1 | 97364 | 3.2 | 3.1 | 68394 | 221134 | C91-C95 |
| All sites but non-melanoma skin | 506065 ₇ | 164.3 | 161.5 | 2927896 | 95.1 | 92.1 | 349095 ₇ | 13022650 | C00-C96/C44 |

Table 2. Cancer Incidence Rates- World – Females

| SITE | India - Females | | | | | | | | | |
|---------------------------------|-----------------|------------|--------|-----------|------------|--------|------------|---------|-----------------|--|
| | Incidence | | | Mortality | | | Prevalence | | ICD-10 | |
| | Cases | Crude Rate | ASR(W) | Deaths | Crude Rate | ASR(W) | 1-year | 5-year | | |
| Oral cavity | 30906 | 6.1 | 7.5 | 17106 | 3.4 | 4.2 | 22600 | 77170 | C00-C08 | |
| Nasopharynx | 1150 | 0.2 | 0.3 | 841 | 0.2 | 0.2 | 854 | 2912 | C11 | |
| Other pharynx | 7793 | 1.6 | 1.8 | 5858 | 1.2 | 1.4 | 4979 | 14558 | C09-C10,C12-C14 | |
| Oesophagus | 20805 | 4.1 | 5.1 | 17938 | 3.6 | 4.4 | 7418 | 17442 | C15 | |
| Stomach | 11743 | 2.3 | 2.8 | 9962 | 2.0 | 2.4 | 5636 | 15996 | C16 | |
| Colon and rectum | 13555 | 2.7 | 3.2 | 9351 | 1.9 | 2.2 | 9534 | 33015 | C18-C21 | |
| Liver | 4477 | 0.9 | 1.1 | 4264 | 0.9 | 1.0 | 1031 | 2256 | C22 | |
| Pancreas | 3506 | 0.7 | 0.8 | 3073 | 0.6 | 0.7 | 757 | 2414 | C25 | |
| Larynx | 3157 | 0.6 | 0.8 | 2075 | 0.4 | 0.5 | 2246 | 8081 | C32 | |
| Lung | 8046 | 1.6 | 2.0 | 6934 | 1.4 | 1.7 | 2646 | 6394 | C33-C34 | |
| Melanoma of skin | 882 | 0.2 | 0.2 | 471 | 0.1 | 0.1 | 698 | 2557 | C43 | |
| Breast | 82951 | 16.5 | 19.1 | 44795 | 8.9 | 10.4 | 71493 | 269470 | C50 | |
| Cervix uteri | 13208 | 26.2 | 30.7 | 74118 | 14.7 | 17.8 | 101583 | 370243 | C53 | |
| Corpus uteri | 6937 | 1.4 | 1.7 | 2707 | 0.5 | 0.7 | 6046 | 23584 | C54 | |
| Ovary etc. | 21146 | 4.2 | 4.9 | 16319 | 3.2 | 3.8 | 15339 | 53627 | C56,C57.0-4 | |
| Kidney etc. | 2129 | 0.4 | 0.5 | 1459 | 0.3 | 0.3 | 1247 | 4685 | C64-C66,C68 | |
| Bladder | 3031 | 0.6 | 0.7 | 1907 | 0.4 | 0.5 | 2319 | 8452 | C67 | |
| Brain, nervous system | 7530 | 1.5 | 1.6 | 6149 | 1.2 | 1.4 | 3570 | 10525 | C70-C72 | |
| Thyroid | 8686 | 1.7 | 1.9 | 4538 | 0.9 | 1.0 | 7187 | 31918 | C73 | |
| Non-Hodgkin lymphoma | 7389 | 1.5 | 1.7 | 5227 | 1.0 | 1.2 | 4190 | 14718 | C82-C85,C96 | |
| Hodgkin lymphoma | 2155 | 0.4 | 0.5 | 1047 | 0.2 | 0.2 | 1674 | 6523 | C81 | |
| Multiple myeloma | 2525 | 0.5 | 0.6 | 2044 | 0.4 | 0.5 | 1549 | 4249 | C90 | |
| Leukaemia | 9778 | 1.9 | 2.1 | 7977 | 1.6 | 1.7 | 4164 | 10630 | C91-C95 | |
| All sites but non-melanoma skin | 44759 | 88.8 | 104.4 | 284636 | 56.5 | 67.6 | 306532 | 1089125 | C00-C96/C44 | |

Mortality: Incidence and survival
Prevalence: Incidence and survival
Crude and Age-Standardised (World) rates, per 100,000
GLOBOCAN 2002, IARC

Table 3. Cancer Incidence Rates – India – Females



Fig. 2. The women need education and empowerment

2. INITIATION – of cancer registry

- POPULATION BASED CANCER REGISTRY IS A MUST FOR THE SUCCESSFUL IMPLEMENTATION OF A SCREENING PROGRAM
- There are Urban and Rural Population based Cancer registries
- Cancer registry is important to know the cancer pattern
- Priority for preventable cancers by screening, is an important use
- Our Ambillikai Cancer Registry, was population based rural cancer registry in India started in 1995, and its an Associate Member of the International Association of Cancer Registries

3. INFERENCE – of the cancer pattern

- Leads for the planning of control strategies
- Ambillikai cancer registry recorded one of the highest ASR for cancer cervix (65.4/ 100 000)
- This gave the lead for a community based cervical cancer screening programme

Supported by our publication:

“Leads to cancer control based on cancer patterns in a rural population in South India”
R.Rajkumar, R.Sankaranarayanan, A.Esmi, R.Jeyaraman, J.Chcrian & D.M.Parkin,
Cancer Causes and Control 2000; 11:433-39

4. IMBIBE – the appropriate technology

- Developing countries can seek technical support from developed nations
- Low resource settings need appropriate, affordable and accessible technologies
- Technical & Financial constraints to be overcome by resource development
- In rural India - Cervical Cancer Screening was not a health care priority
- Hence we offered once a life time - VIA, Colposcopy
- High risk approach is needed for selected population
- 80% PARTICIPATION was targeted, and achieved

Supported by our publication:

“Effective screening programmes for cervical cancer in low-and middle - income developing countries”
Rengasamy Sankaranarayanan, Atul Madhukar Budukh, Rajamanickam Rajkumar,
Bulletin World Health Organisation, 2001, 79(10) 954-962

5. INSTALL – resources

- Political Will & Commitment
- Manpower - train local health staff
- Materials - locally available equipments and local maintenance expertise
- Money - internal and/or external funds

Supported by our publication:

“Early detection of cervical cancer with visual inspection methods, A summary of completed and on - going studies in India”.

R.Sankaranarayanan , IARC/WHO, B.M. Nene , K.Dinshaw , R.Rajkumar , S.Shastri ,
R.Wesley ,P.Basu , R.Sharma , S.Thara , A.Budukh , D.M. Parkin , IARC/WHO
Public Health Journal of Mexico (Revista de Salud Publica de Mexico)

In commemoration with 80th Anniversary School of Public Health & 15th Anniversary
National

Institute of Public Health, Mexico, July 2002



Fig. 3. Use local manpower

6. INSPIRE – personnel

- Lighted to lighten, the health care providers play key role
- Financial incentives, motivates them
- Social recognition is very important in team work
- Appreciation means a lot for the workers
- Awards, titles, honours, cost little but the gain is big



Fig. 4. Inspiration and motivation of the Health care providers ensure success

- Even in the Olympics it is a small “MEDAL” which matters

7. INVOLVEMENT

- Involve both “ providers” & “recipients”
- All levels of micro & macro planning
- All levels of implementation
- When we hear we forget
- When we see we remember
- When we do we know

8. INVITE

- It is humans’ innate desire to be invited for participation
- Advertisements, Propaganda, Bombardment with information – may not work
- Invitation with genuine Interest by Influencers works well

Methods of Invitation

- Mass – Appeal to “Emotions” – Use the words “Mothers”, “ Wives”, “Sisters” instead of Women
- Families – Appeal to “Responsibilities” of the family towards the motherhood and their duty for “ mother’s” health
- Individuals – Appeal to their “self care and self esteem”

Who would invite ?

- The “Influencers”
- Medical personnel, village leaders, religious leaders, local healers, teachers
- Satisfied Customers
- Peer groups
- Family members
- Educating the school children have resulted in them bringing their mothers for screening – “tender roots split hard rock”

9. INSURE – holistic health

- Rural community does not appreciate “organ specific approach”
- Wholesome approach for holistic health is the demand
- Do whatever possible for total care – even counseling and advice are well received
- Health is a state of complete physical, mental and social well being and not merely an absence of disease or infirmity – Health for All



Fig. 5. A woman expects holistic health care from the provider

10. INDIGENOUS

- In thoughts, words and deeds
- “Cancer” is scary, terrifying and people are afraid to get diagnosed as to have cancer
- Start from what they know and build from what they have
- Address their common complaints like “wdpv”, “abnormal bleeding pv” and then explain about precancer and cancer.
- Perform VIA, colposcopy and cryotherapy/LEEP and the “women get rid of their complaints” and we have done our “screening for cervical cancer” . Thus we have made the very “problem” as “indigenous”

Indigenous - Screening Environment

- People in villages are reluctant to get in to the huge vans or buses for screening as these are unusual environments to them
- Hence, screening clinics could be arranged in places which are frequently visited by the people, like health centre buildings, schools, ration shops, public utility buildings

Indigenous - Health personnel

- Like begets like
- Birds of the same feather flock together
- Screening could be done by trained local nurses and health workers
- Examination - Female to female and male to male
- Identification with the people in all possible ways ensures good compliance

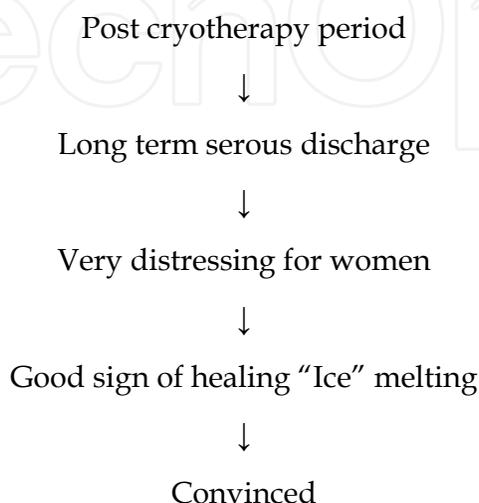
Indigenous in attitude

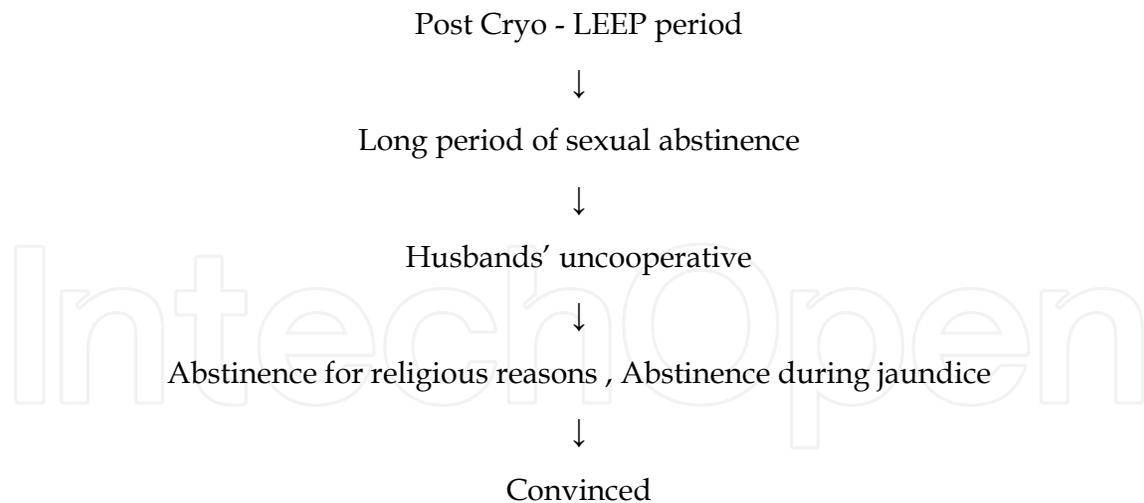
- Never say that the other is wrong, only that they may not be right
- Never call the local customs, beliefs, hopes, attitudes and practices as superstitions. It will hurt the feelings. Just guide them rightly.
- Screening clinics should ensure privacy, confidentiality in a pleasant atmosphere.
- All services under one roof and cordial relationship to be maintained
- No outside prescriptions, referrals
- Counsel the family as a whole, whenever possible

11. INSTITUTE – follow up

- In rural India, people greet each other by asking “ How are you ? ”
- People appreciate this gesture very much as it conveys one’s concern and regard
- If this is done in a scientific way it is called the “ follow up ”, and it should be done meticulously and frequently. The possible outcomes of the screening should be well explained before hand and the need for passive follow up should be well understood by the beneficiaries and their families.

How we tackled some of the problems!





Problem Solving

- Dialogues, Discussions would definitely Dissolve many of the Deterrent factors
- Communication gap closes the doors
- Careful and considerate listening are very important for community based programmes
- Counseling increases the community's compliance for the programme

Determinants of Participation

- Educational level
- Social status
- Economic status
- Type of family
- Severity of the disease
- Satisfactory services

Supported by our publication:

“Determinants of participation of women in a cervical cancer visual screening trial in rural south India”

Rengaswamy Sankaranarayanan, Rajamanickam Rajkumar, Silvina Arrossi, Rajapandian Theresa, Pulikattil Okkaru Esmey, Cerdric Mahe, Richard Muwonge, Donald Maxwell Parkin, Jacob Cherian

Cancer Detection and Prevention 27 (2003) 457 – 465

12. ILLUSTRATE – study findings

- The above strategies helped us to successfully complete one of the largest cervical cancer screening programmes done in rural areas.

Supported by our publication:

“Initial results from a randomized trial of Cervical Visual Screening in rural South India”.

R. Sankaranarayanan. R. Rajkumar, et al.

International Journal of Cancer 2004; 109, 461 – 467

DINDIGUL RCT OF CERVICAL SCREENING, INDIA

Flow chart of the design and preliminary results of the study

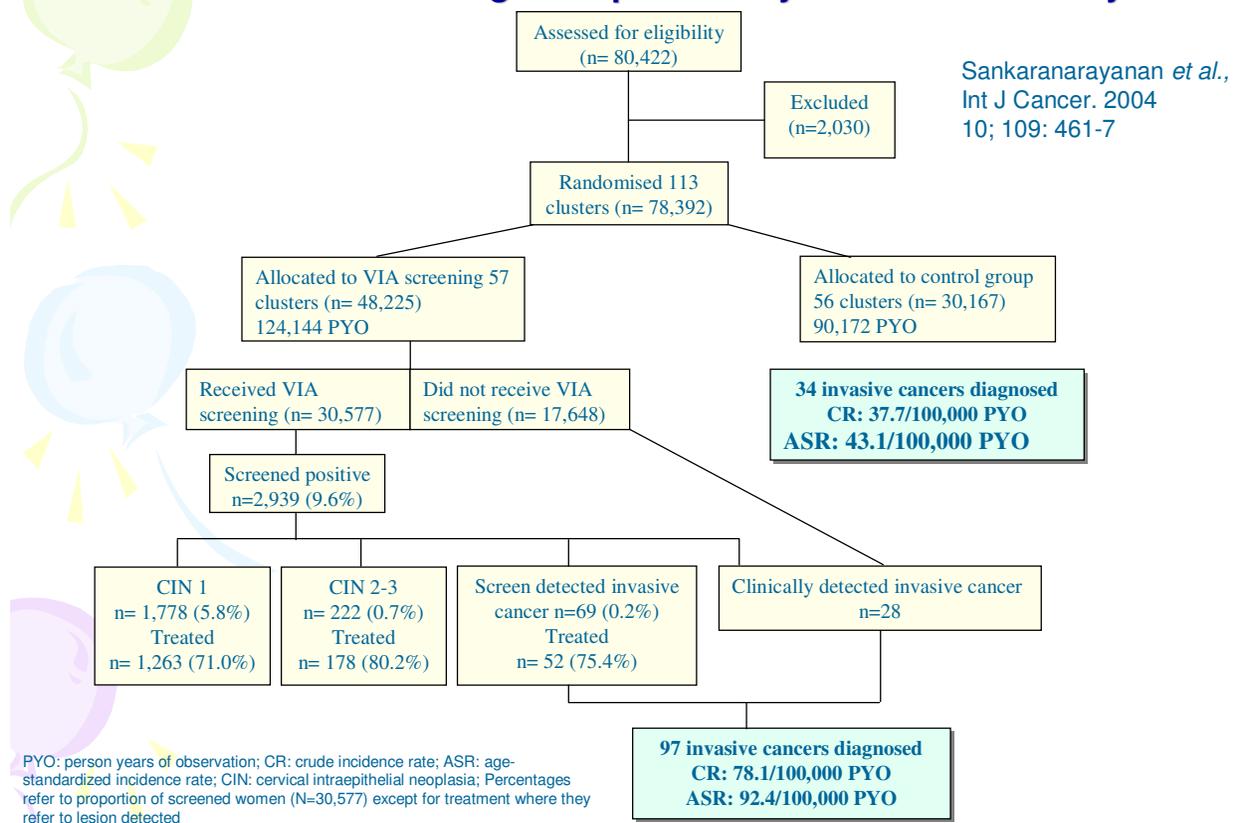


Fig. 6.

13. IMPROVE

Successful completion of a program improves capabilities of the health care providers and it leads to further research, like our other studies:

HPV Studies:

Study 1

Papillomavirus infection in rural women in southern India

Franceschi, R Rajkumar, P.J.F. Snijders, A Arslan, C Mahe, M Plummer, R Sankaranarayanan, J Cherian, C.J.L.M. Meijer and E Weiderpass, *British Journal of Cancer* (2005) **92**, 601 – 606

Study 2

Worldwide distribution of HPV Types in Cytologically Normal Women: Pooled Analysis of the IARC HPV Prevalence Surveys

G. Clifford (PhD), S. Gallus (ScD), R. Herrero (MD), N. Muñoz (MD), P.J.F. Snijders (PhD), S. Vaccarella (ScD), P.T.H. Anh (MD), C. Ferreccio (MD), N.T. Hieu (MD), E. Matos (MD), M. Molano (PhD), R. Rajkumar (MD), G. Ronco (MD), S. de Sanjosé (MD), H.R. Shin (MD), S. Sukvirach (MD), J.O. Thomas (MD), S. Tunsakul (MS), C.J.L.M. Meijer (MD), S. Franceschi (MD) and the IARC HPV Prevalence Surveys (IHPS) Study Group, *Lancet* 2005;**366(9490):991-8**.

Study 3**HPV vaccine trial****“Preparation of a large, simple “phase IV” study of anti- HPV Vaccination in Asia”**

Silvia Franceschi IARC/WHO, Richard Peto, T.Rajkumar, R.Rajkumar, Rengaswamy Sankaranarayanan, Soina Pagliusi, Teresa Aguado & Thomas Cherian, **Scientific Paper Submitted to the HPV International Conference – Floriano polis – June 2001.**

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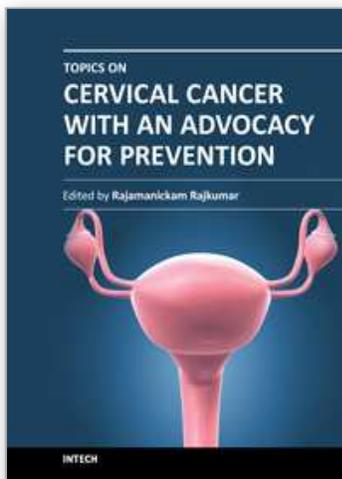
The editor is happy to enlist all his publications for further reference :

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Topics on Cervical Cancer With an Advocacy for Prevention

Edited by Dr. R. Rajamanickam

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Cervical Cancer is one of the leading cancers among women, especially in developing countries. Prevention and control are the most important public health strategies. Empowerment of women, education, "earlier" screening by affordable technologies like visual inspection, and treatment of precancers by cryotherapy/ LEEP are the most promising interventions to reduce the burden of cervical cancer. Dr Rajamanickam Rajkumar had the privilege of establishing a rural population based cancer registry in South India in 1996, as well as planning and implementing a large scale screening program for cervical cancer in 2000. The program was able to show a reduction in the incidence rate of cervical cancer by 25%, and reduction in mortality rate by 35%. This was the greatest inspiration for him to work on cervical cancer prevention, and he edited this book to inspire others to initiate such programs in developing countries. InTech - Open Access Publisher plays a major role in this crusade against cancer, and the authors have contributed to it very well.

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