CVD Prevention at work place settings

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Outline

• Review of Indian Industrial Worksite program for CVD prevention
• Brief update on International experience
• Best practices
• How do we plan future programs
Objectives

Establish a comprehensive sentinel surveillance system for CVD in Indian industrial populations through a public-private partnership:

- surveillance of CVD risk factors
- ascertainment of cause of death
- and
- comprehensive interventions for CV risk factor reduction
Study Settings

• Ten large/medium industries across India, employing 1500-5000 people (public & private) twinned to medical colleges (public & private)

• Employees and their family members

• Basic screening: 35000

• Detailed survey: 20000

• Survey with blood for biochemical analysis: 10500
# SSS in Indian Industries

## Participating Industries and Medical Colleges

<table>
<thead>
<tr>
<th>Site</th>
<th>Industry</th>
<th>Twinned Medical College</th>
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<tbody>
<tr>
<td>Bangalore</td>
<td>Hindustan Machine Tools Ltd.</td>
<td>Dr. B.R. Ambedkar Medical College</td>
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<tr>
<td>Coimbatore</td>
<td>Premier Instruments and Controls Ltd.</td>
<td>P.S.G. Institute of Medical Sciences</td>
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<tr>
<td>Delhi</td>
<td>Bharat Electronics Ltd.</td>
<td>All India Institute of Medical Sciences</td>
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<tr>
<td>Dibrugarh</td>
<td>Tea Estate-Assam Company Ltd.</td>
<td>Assam Medical College</td>
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<tr>
<td>Hyderabad</td>
<td>Bharat Heavy Electricals Ltd.</td>
<td>Nizam’s Institute of Medical Sciences</td>
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<tr>
<td>Lucknow</td>
<td>Hindustan Aeronautics Ltd.</td>
<td>King George’s Medical College</td>
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<tr>
<td>Ludhiana</td>
<td>Hero Cycles Ltd.</td>
<td>Christian Medical College</td>
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<td>Nagpur</td>
<td>Indo Rama Synthetics (I) Ltd.</td>
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<tr>
<td>Pune</td>
<td>Hindustan Antibiotics Ltd.</td>
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<tr>
<td>Trivandrum</td>
<td>Travancore Titanium Products Ltd.</td>
<td>Sri Chitra Tirunal Institute for Medical Sciences and Technology</td>
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Study flow chart

Baseline cross sectional survey (10 centres, n=10,432 and Overall response rate=87.3%)

Intervention sites (6/10 centres, n=4,885, and response rate =82.4%)

Interventions: 2003-2006

Independent cross sectional survey: 2006 Jan-2006 Oct (n=5,899 and response rate=98.3%)

Common individuals attended both surveys (n=1,982)

Control site (1/10 centres, n=943, and response rate: 90.0%)

No formal onsite interventions: 2003-2006

Independent cross sectional survey: 2006 Sep-2007 Sep (n=907 and response rate=90.7%)

Did not participate in the remaining phase of the programme (3/10 centres, n=4,604)

Common individuals attended both surveys (n=349)

Rationale
Interventions were targeted to

- Create readiness to change
- Influence aspiration to change and espouse new behaviors
- Improve engagement of individuals and community-interactions, develop self-efficacy, and prevent relapses
- Change environmental barriers (work-site, educational inst., canteens, hotels, overcoming cost factors, availability)
- Eliminate environmental societal stimulants
- Introduce behavioral supports
Interventions

Population approach:
• Short communicative promos on fruit and vegetable consumption, physical activity, fat consumption, tobacco (smokeless and passive smoking)
• Handouts on hypertension, diabetes, signs of acute MI, BMI, Fruits/Vegetables not expensive if chosen appropriately
• Pamphlets, posters, health talks, health melas, healthy cooking competitions.

High Risk Approach:
• Individual counseling, group counseling, referral to medical doctor for management of hypertension, diabetes and dyslipidemia.

Environmental changes:
• Provided healthier alternatives at canteen, banned tobacco inside the premises.

Policy level efforts:
• To modify the social environment.

• Team interactions
KEY MESSAGES for diet

• Fruits and vegetables (inexpensive and locally available) at least 3-5 servings every day

• Reduce salt intake: Decrease in use of extra salt to cooked food; reduce processed food

• Limit fat, especially saturated fat

• For Non Vegetarians: Fish (2-3 times a week; optional)
An invitation to a healthy heart & an active life!

Eat plenty of fresh vegetables and fruits everyday!
Eat whole-grain and whole pulses!

HEALTHY EATING - a way of life!

Reduce the intake of fried foods and refined carbohydrates.
Avoid foods like puries paranthas, samosas, kachories, pakodas, cold drinks, namkeens, chips, murkhs, vadas, etc.
Reduce the salt intake in your daily diet.
SMOKE OUT THESE HEALTH RISKS

Quitting Smoking: Think about it

- Risk of cancers comes down with every year of not smoking.
- Heart attack risk drops to the same level as a non-smoker three years after quitting.
- You will have a better skin and complexion, and fewer wrinkles.
- You will become fitter and breathe easier.
- You will live longer; one in two long term smokers die early and lose about 16 years of life.
- Food and drink taste better.
- Your kids are less likely to smoke if you don’t.
- Your kids are less likely to develop respiratory problems.
- Your persistent cough and phlegm will slowly disappear.
- You will have better chance of conceiving and having a healthy baby.
- You will have more money to spend on other things; smoking a pack a day costs more than your child’s school fees.
IMPACT OF SECOND HAND SMOKE

SMOKING KILLS

THE SMOKE FROM YOUR CIGARETTE HARMS PEOPLE AROUND YOU
Walking To Work

Yes, walking towards Health!
Walking away from Diabetes!
Walking away from Paralytic Strokes!
Walking away from blood pressure, heart disease...

Produced for the Sentinel CVD Surveillance Project by
Initiative for Cardiovascular Health Research in the Developing Countries &
All India Institute of Medical Sciences
ksreddy@ichealth.org

With support from Ministry of Health & Family Welfare,
Government of India & World Health Organisation
Interventions for high risk subjects and providers

- Promotion of self screening for CV risk factors
- Opportunistic screening
- Guidelines for targeted screening
- Guidelines for evidence based care for HT, diabetes, AMI, CHD and stroke
- Emphasis on control of risk factors
It's real Diabetes preventable!

By being physically active for 150 minutes in a week and lose about 5-7% of your body weight. (If you are overweight).

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I have Diabetes!
My safety ring

Freedom from diabetes related eye problems, kidney problems, feet gangrene, heart problems & strokes (paralysis)

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The rationale for the interventions

Comprehensive Combined approaches

Population+ High risk +policy
Results
Prevalence of tobacco use, extra salt and fruit consumption and median physical activity score

Tobacco use

Extra salt use

Fruits consumption

Median physical activity score
Comparison of percentage change in mean risk factors in intervention and control area

Intervention sites

Control site

1=Weight in Kg, 2=Waist Circumference in cm, 3=Systolic Blood Pressure in mm of Hg, 4=Diastolic Blood Pressure in mm of Hg, 5=Plasma Glucose in mg/dl, 6=Total Cholesterol in mg/dl, 7=High Density Lipoprotein Cholesterol in mg/dl, and 8=Serum Triglycerides in mg/dl

*Horizontal line for each variable represents the point estimate and the ends of the vertical line represent 95% CI of the point estimate*
Proportion of individuals above the Framingham 10 year CVD risk of \( \geq 10\% \)
Percentage mean difference in change (i-c) in CVD risk factors in cohort analysis (Mixed linear model adjusted for age, educational status, sex, baseline BMI and baseline mean of the same variable)

Wt=weight, WC=waist circumference, SBP=systolic blood pressure, DBP=diastolic blood pressure, P Glucose=plasma glucose, TC=total cholesterol, HDLc=high density lipoprotein and Tg=triglycerides.

Horizontal line for each variable represents the point estimate and the ends of the vertical line represent 95% CI of the point estimate.
Implications

- Demonstration of the feasibility and efficacy of worksite-based prevention strategies
- Scope for identifying sustainable strategies for health promotion within the existing health care infrastructure
- Sustainable health system models built on shared responsibility between private and public organizations
Major worksite Programs till 2005

• Capital Iron and Steel Company of Beijing (CISC), Intervention for CVD risk reduction (1974-1998; 110 000 employees)

• Multi-component Workplace Health Promotion Program Conducted in Japan

• Multicomponent worksite health promotion program: Switzerland

• A Healthier You (AHY) program (Kansas city)

Mixed results; Benefits in the short term
CVD Prevention – Worksite Interventions

• Majority of trials have been performed in North America, Western Europe, Japan, and Australia

• Common Limitations:
  – Single-component interventions
  – Short duration
  – Self-reporting
  – Endpoints – surrogates for CVD risk factors

Katz DL et al.  MMWR Recomm Rep 2005
Types of Worksite Interventions

**Physical Activity**
- Typical worksite intervention does not demonstrate a significant increase in physical activity/fitness (26 studies, ~9000 participants)

**Nutrition**
- Mean weight loss of 1.3 kg at 12 months using informational and behavioral skills components (32 studies)

www.thecommunityguide.org/obesity/workprograms.html
A Review and Analysis of the Clinical and Cost-effectiveness Studies of Comprehensive Health Promotion and Disease Management Programs at the Worksite

- 27 new studies focused on the clinical and cost outcomes research focused on worksites and published between 2008 to 2010
- New studies indicate further evidence of positive outcomes
- “provide guarded cautious optimism about the clinical and/or cost-effectiveness of these worksite programs”.

Pelletier; JOEM 2011: 53 (11): 1310-31
Lifestyle-focused interventions at the workplace to reduce the risk of cardiovascular disease – a systematic review

• Review included 31 RCT (18 high quality), describing a diversity of interventions
• Strong evidence was found for a positive effect on body fat
• Among populations “at risk”, there was strong evidence for a positive effect on body weight
• Populations with an elevated risk of CVD seemed to benefit most from lifestyle interventions

Why did we find a difference?
DEVELOPED COUNTRIES

- CVD RISK
  - NO INTERVENTION
  - EFFECTIVE INTERVENTION

Time
LMICs

CVD RISK

Time

NO INTERVENTION

EFFECTIVE INTERVENTION
Designing a program: personal thoughts

• To build robust programs consider embedding research through innovative designs such as step wedge designs
• Incorporation of mixed methods of analysis
• Cost and cost effectiveness needs to be considered
• Re casting the current employee health check up programs which are essentially screening for disease
• Use best practices
Best practices for success

• Organizational commitment; Senior executive participation
• Employee involvement at all stages of development and implementation + Incentives
• Effective screening and triage and Effective targeting of high-risk individuals
• State-of-the-art theory
• Evidence-based interventions
• Effective Communication and implementation
• Concurrent and continuous evaluation.
• Linking of program to business objectives
• Providing an enabling environment
Acknowledgements

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- Ministry of Health and Family Welfare, Government of India