SAVING NEWBORN LIVES

- Searching for Solutions

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लोकमान्य टिळक महानगरपालिका
सर्वसाधारण रुग्णालय आणि वैद्यकिय महाविद्यालय
LOKMANYA TILAK MUNICIPAL
GENERAL HOSPITAL & MEDICAL COLLEGE

The beginning…


Why do
newborns die

Old Incubators

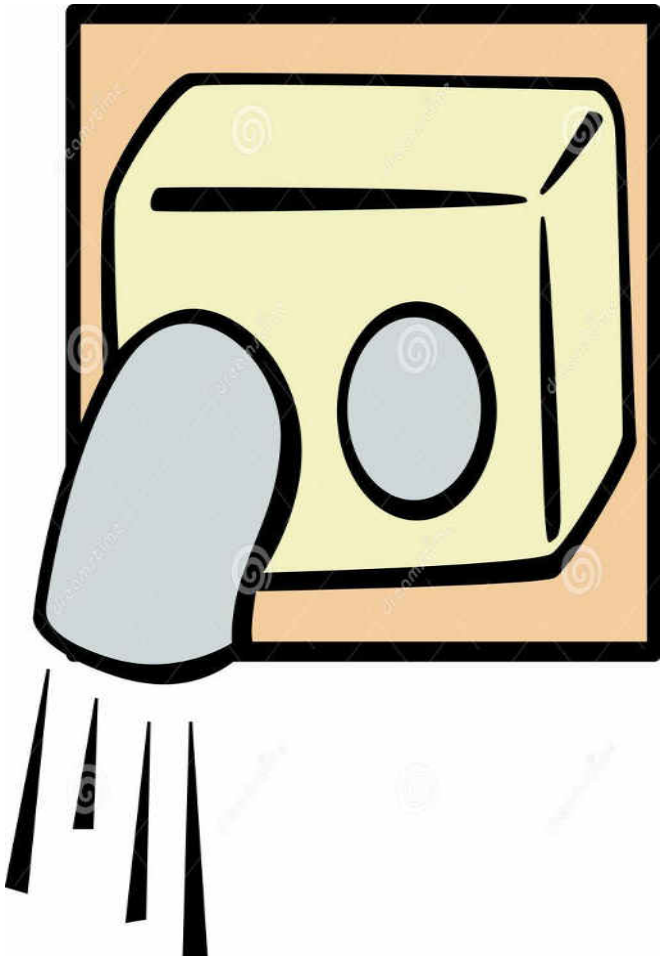
Washbasins in the unit

Lack of nurses

Infant feeding practices

- Formula feeds
- Use of bottles for feeding

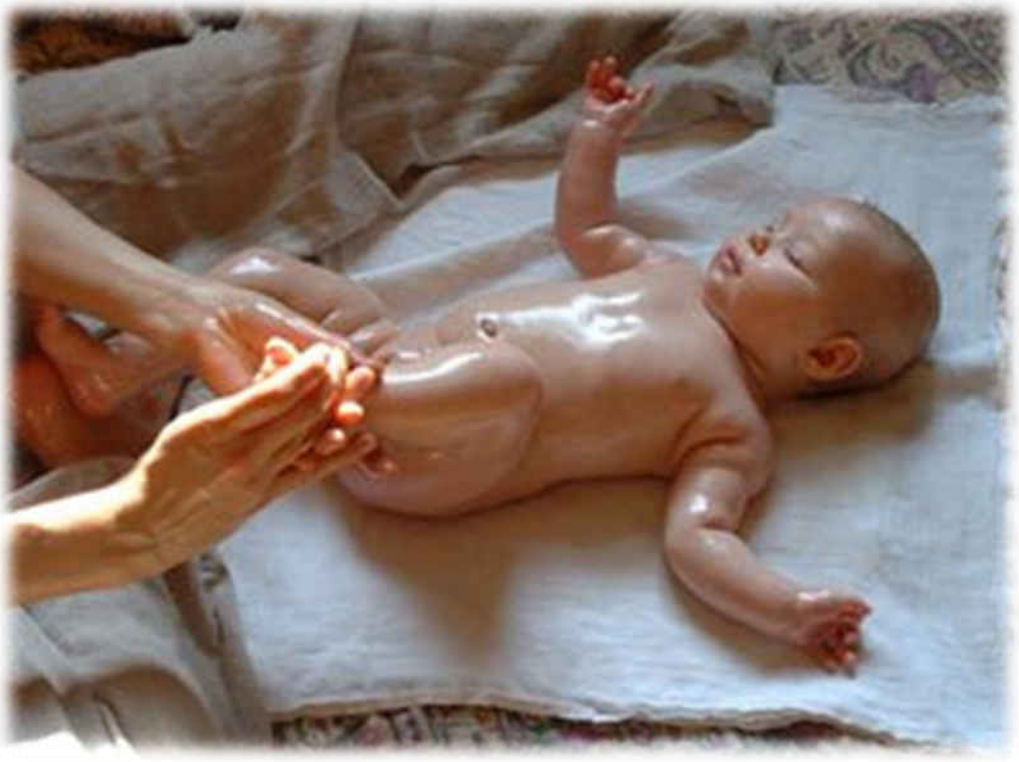
Washbasins outside the unit and use of hand towels



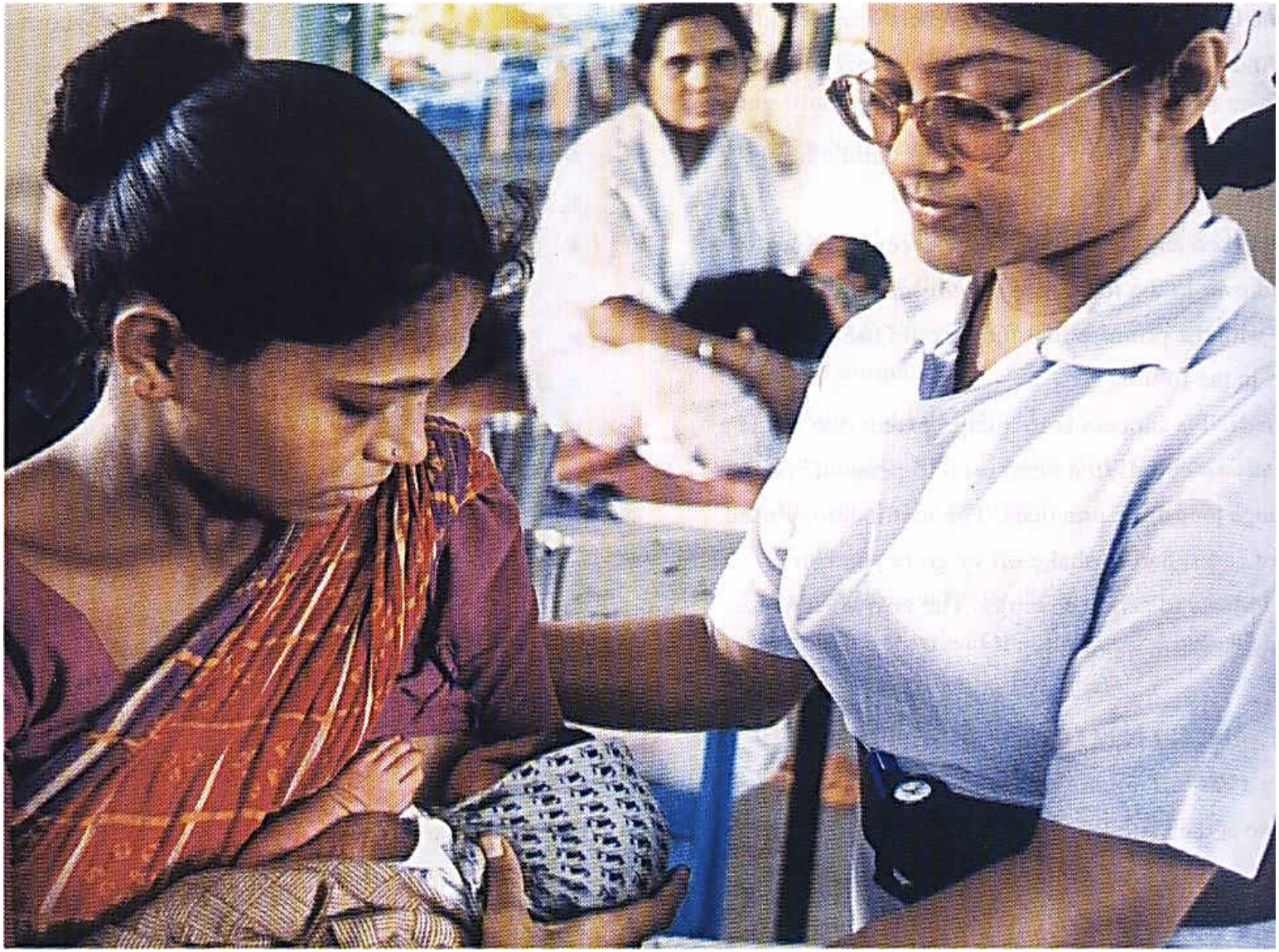
Heaters

Table Lamps

Oil application



Involving Mothers in the Care of Their Babies…




HMBRC
HUMAN MILK BANK
& RESEARCH CENTRE

Evidence for Policy changes in the unit

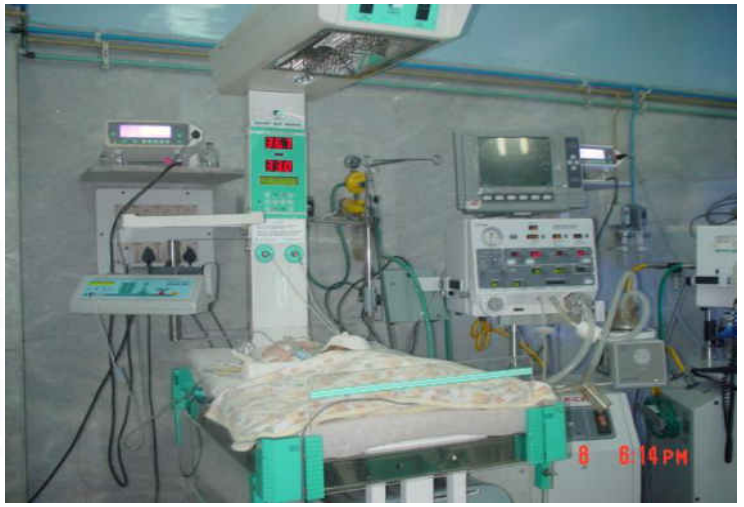
- Simple studies
- Prelacteal feeds
- Temperature of babies in the labour room
- Feeding practices of babies in the postnatal OPD

The Result

– Reduced Mortality and many newborn lives saved

Advanced technological solutions

NICU : 12Beds



Transitional Care Unit - 16 Beds

Well Preterm Care Unit - 14Beds

Newborns - beyond the boundaries of the hospital

Can we dream of an India where every woman and child counts?

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Society for Nutrition, Education and Health Action

1999 - 2015

Our Vision

Healthy women and children for a healthy urban world

Core beliefs

- To create models on in urban slums on issues of health of women and children
- Strong research base to create evidence
- Ensure sustainability
- Advocacy for women and child issues in urban health
- To impact policy

How we work

Communities

Facilities

City Initiative of Newborn Health
2004 - 2009

Cluster-randomised controlled trial in Mumbai slums to improve care during pregnancy, delivery, postpartum and for the newborn

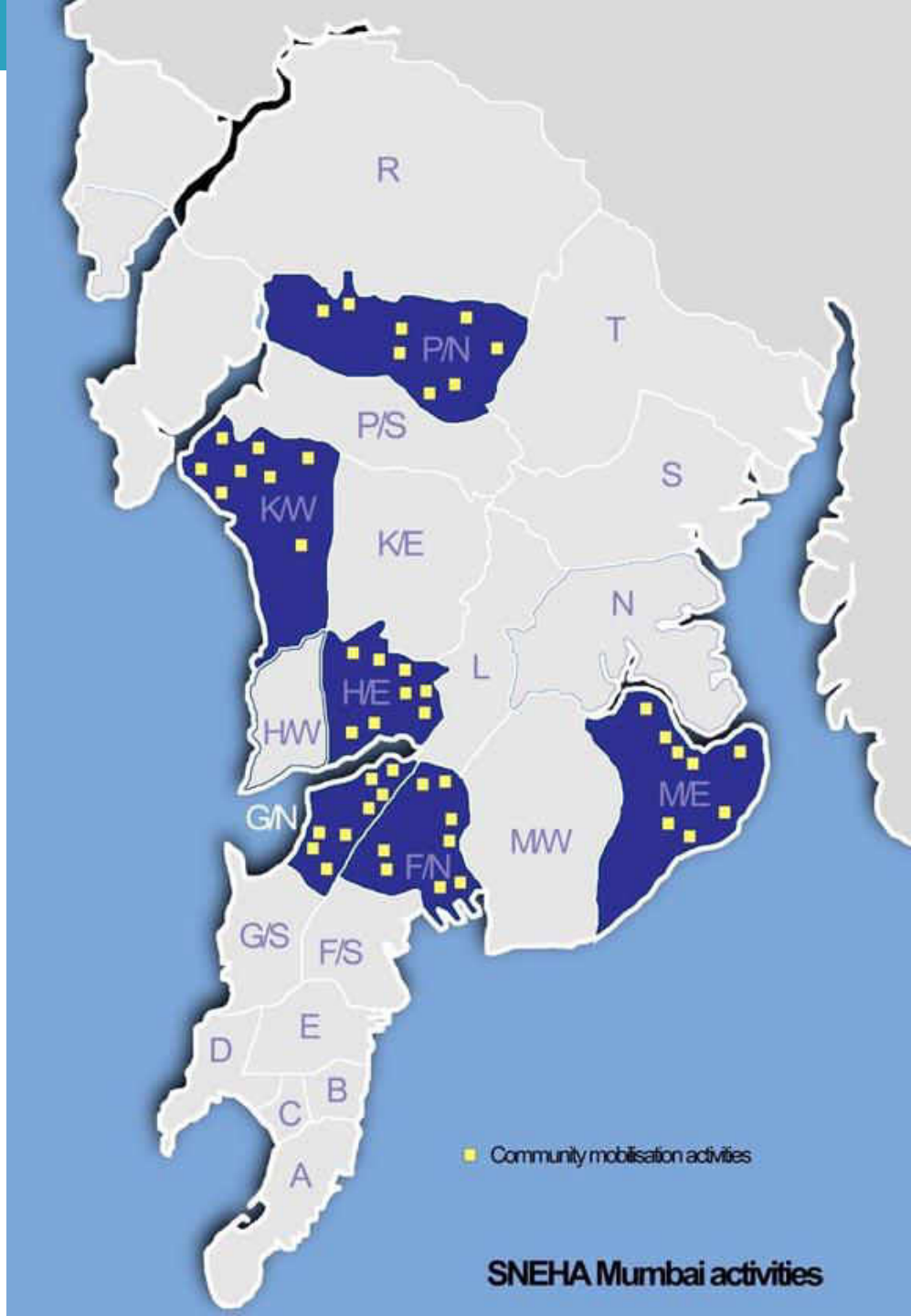
Purpose

To test an intervention that mobilises communities for better health care, in which local women's groups build an understanding of their potential to improve maternal and infant health and develop and implement strategies to do so

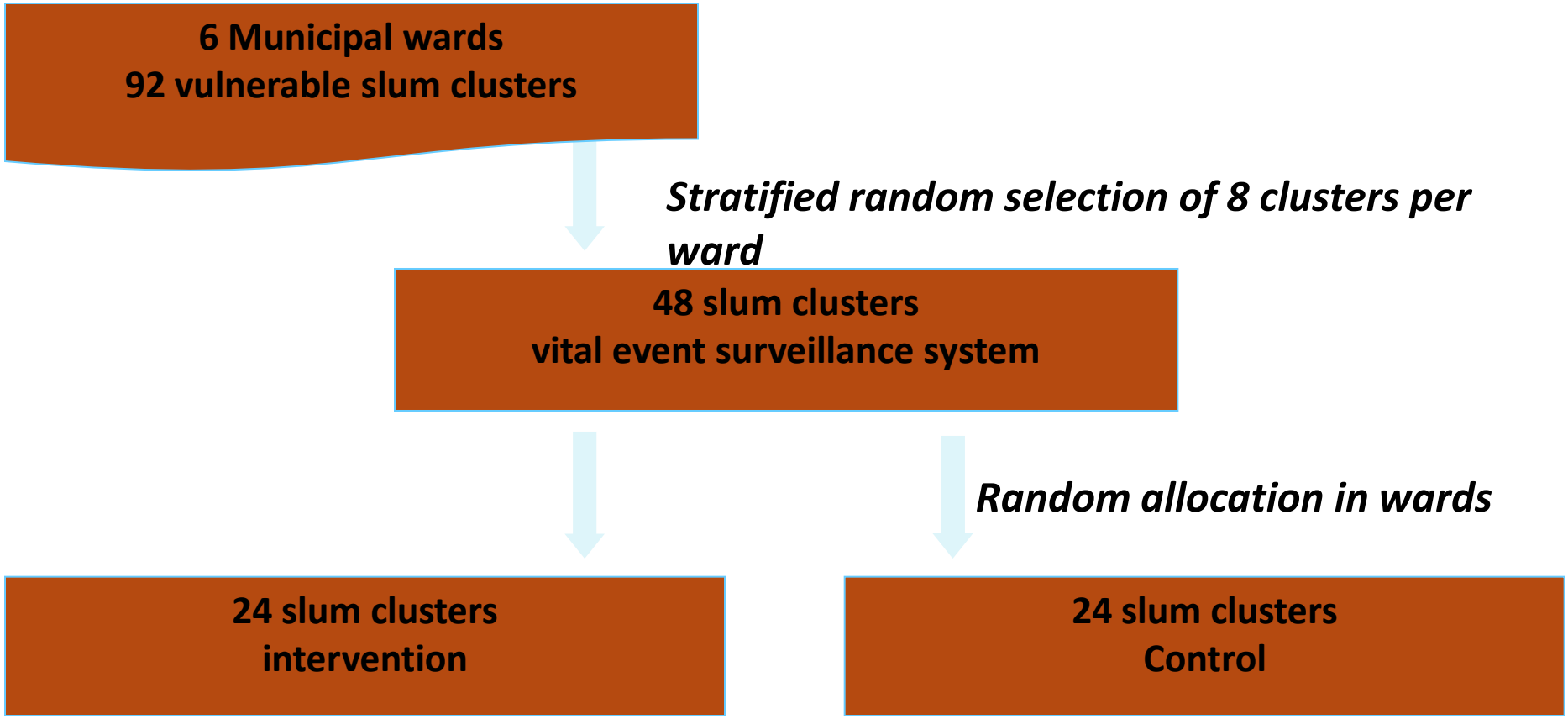
48 slum clusters in 6 wards

Estimated population

283,000



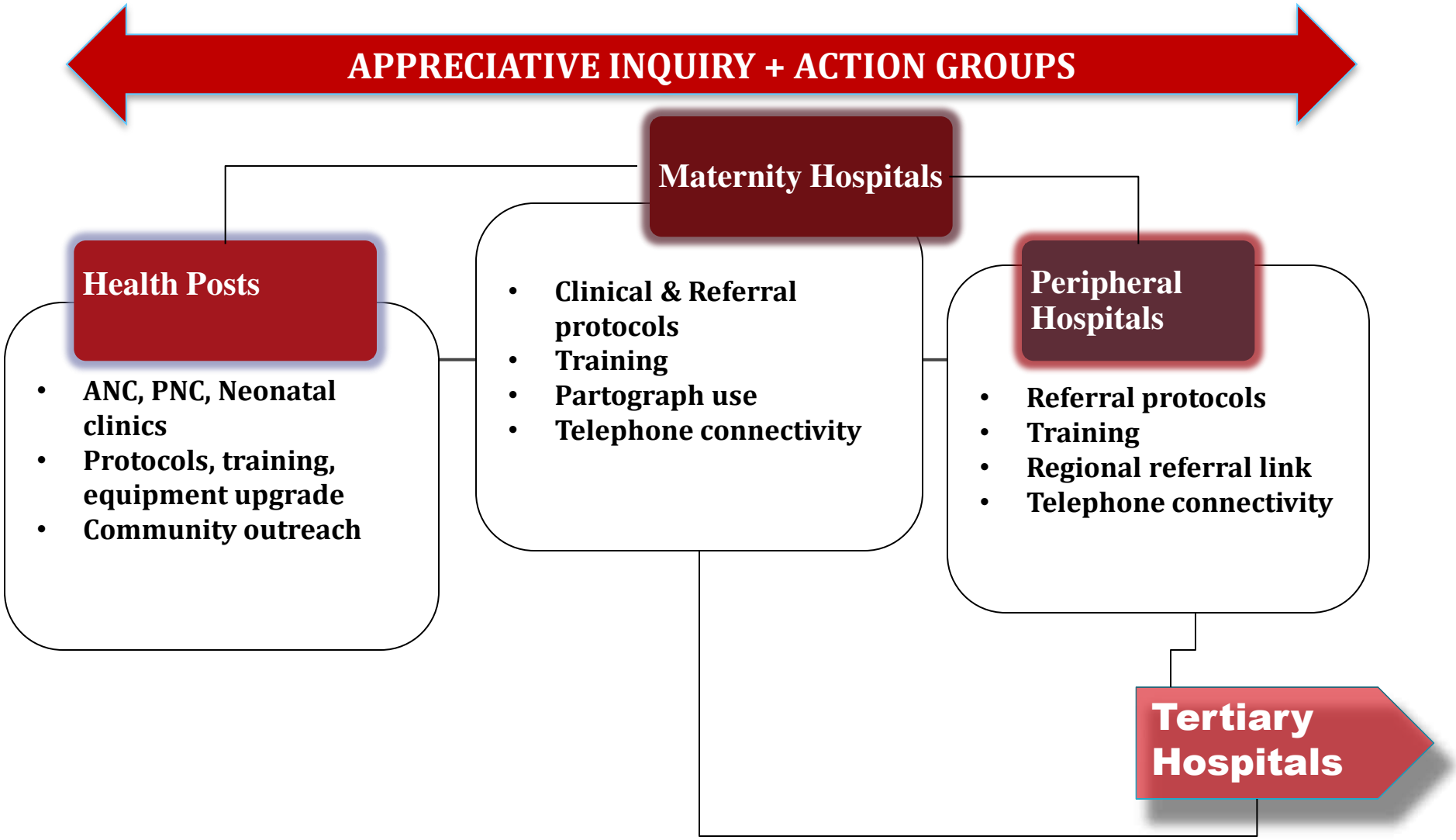
Trial design



Intervention model

- Convening local women's groups
- Facilitated by a *sakhi*
- An action research cycle
- Focus on maternal and newborn health
- Participatory approach
- Iterative development of the cycle

Strategy for change in health facilities



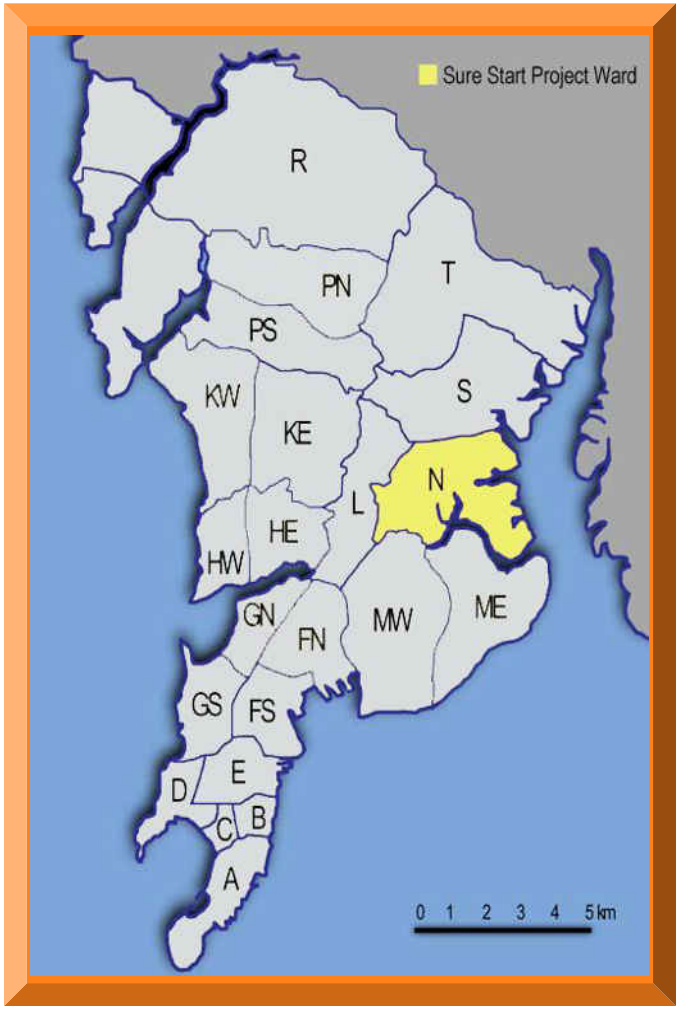
Training of hospital staff

PATH SURESTART

2007-2011

To significantly increase individual, household and community action that directly and indirectly improves maternal and neonatal health.

Project Location



Location: N Ward

Population: 1,96,000

Surestart - Home visit based model

Outcomes

Indicator	Aug 2008 (Baseline)	Jan 2009	May 2010
Early Registration	29.8%	43.77%	90.44%
4 Pregnancy Check-ups	1.4 %	73%	80.61%
2 TT Injections	47%	98.5%	99.48%
100 IFA Consumption	53%	67.26%	73.97%
Breastfeeding within 1 hour of birth	20.6%	79.5%	91.62%
2 Postnatal Care Visits	-	34.75%	63.63%
Benefited from JSY	6%	13.84%	89.79%

CM Trial Impact Paper

Table 3. Primary analysis of mortality outcomes over 3 y, comparing intervention and control arms.

Mortality Outcomes	Intervention	Control	Unadjusted OR (95% CI)	Adjusted for Baseline Mortality Rate OR (95% CI)	Adjusted for Baseline Mortality Rate, Muslim Faith, and Asset Score OR (95% CI)
Stillbirths	73/9,155	85/9,042	-	-	-
Rate per 1,000	7.97	9.40	0.86 (0.60–1.22)	0.86 (0.60–1.21)	0.66 (0.46–0.93)
Neonatal deaths	132/7,944	88/7,759	-	-	-
Rate per 1,000	16.62	11.34	1.48 (1.06–2.08)	1.44 (1.03–2.01)	1.42 (0.99–2.04)
Extended perinatal deaths	205/9,155	173/9,042	-	-	-
Rate per 1,000	22.39	19.13	1.19 (0.90–1.57)	1.16 (0.88–1.51)	1.01 (0.78–1.31)

Location of antenatal and delivery care for births in Mumbai

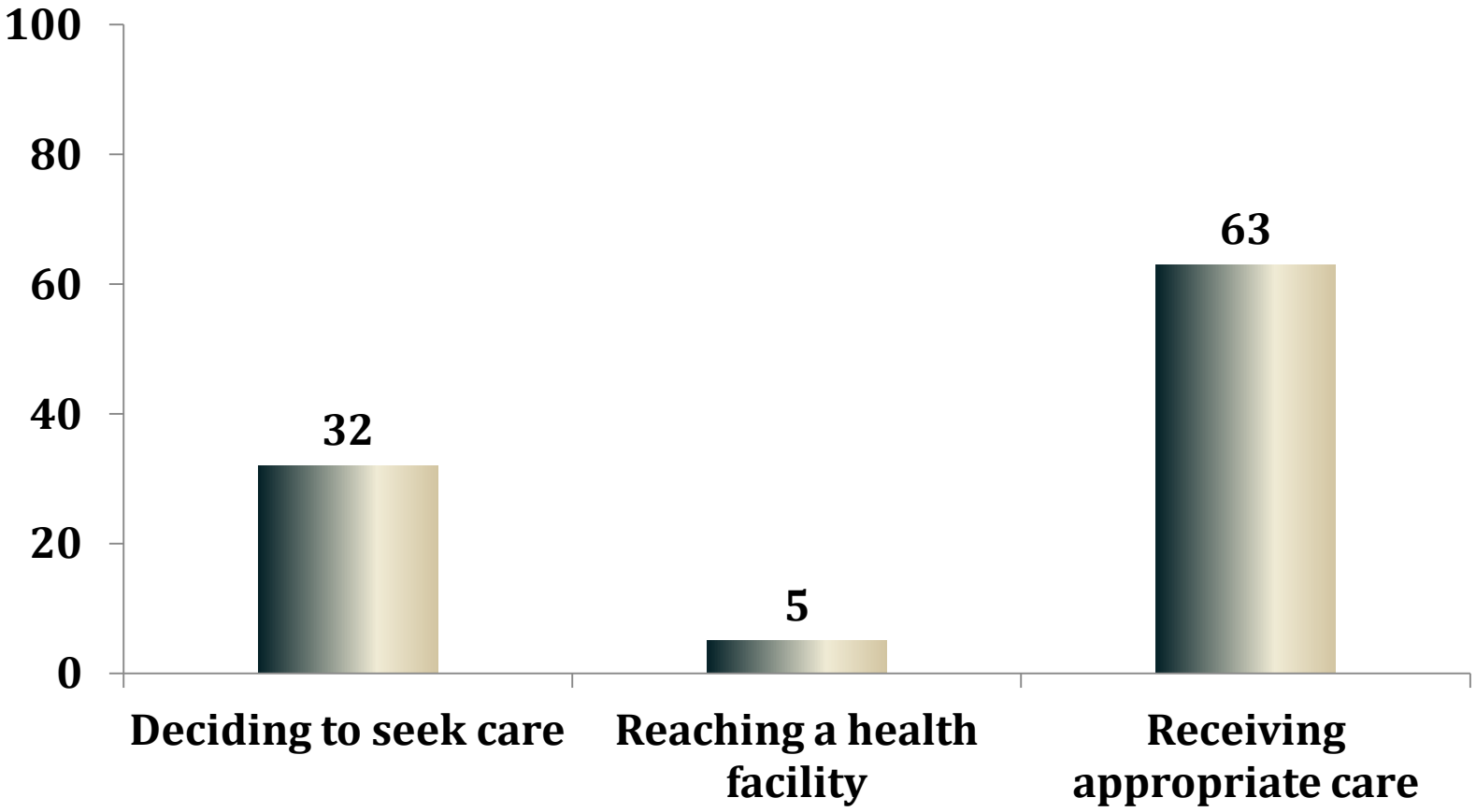
Location of care	% antenatal	% delivery
Public sector	**50**	**61**
Health post	1	0
Urban health centre	3	3
Maternity home	15	15
Municipal general hospital	19	24
Government hospital	3	3
Tertiary hospital	9	16
Private sector	**50**	**39**
Private hospital	29	39
Private practitioner	21	0
Total	100	100

Reasons given for home delivery in 48 Mumbai slums

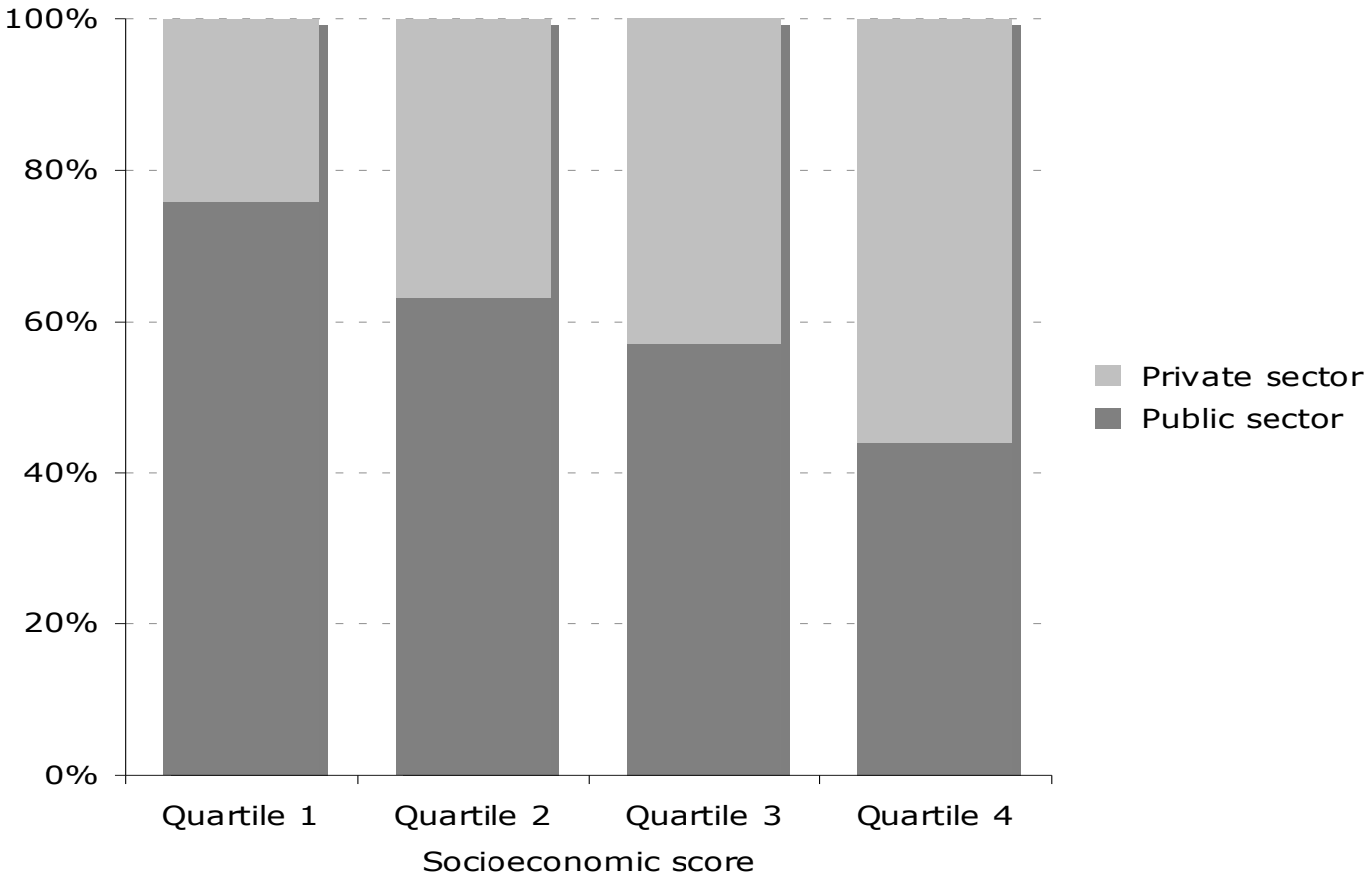
Reason	Frequency	(%)
Custom	480	(28)
Labour too quick to reach institution	230	(13)
Nobody to accompany woman to institution	136	(8)
Fear of institution staff	117	(7)
Convenience	104	(6)
Hospital far from home	101	(6)
Family constraints (permission, nobody to look after children)	93	(5)
Not registered for institutional delivery	57	(3)
Financial barriers	49	(3)
Lack of transport	48	(3)
Asked to return to institution later, but delivery ensued	38	(2)
Poor perception of institutional care	25	(1)
Not admitted to institution because of insufficient documents	8	(0)
Other	92	(5)
Missing data	130	(8)
Total	1708	(100)

Das S, More NS, Bapat U, L Chordhekar, Joshi W, Osrin D. Prospective study of determinants and costs of home births in Mumbai slums. BMC Pregnancy and Childbirth 2010; 10:38.

Three delays model for maternal deaths (%)



Site of postnatal care



Shah More, N., Bapat,U., Das,S., Barnett,S., Costello,A., Fernandez,A., Osrin,D. (2009). Inequalities in maternity care and newborn outcomes: one-year surveillance of births in vulnerable slum communities in Mumbai. International Journal of Equity in Health. 2009; 8 (21)

Births, stillbirths and neonatal deaths, by cluster socioeconomic quartile group, for women who gave birth in urban slum communities under surveillance, Mumbai 2005-06

		Quartile group						Least poor	
	All	1st	2nd	3rd	4th	RR	(95% CI)	poorest	(95% CI)
Births	5687	1816	1253	1391	1227				
Stillbirths	86	31	13	28	14				
Live births	5601	1785	1240	1363	1213				
Neonatal deaths	117	45	27	25	20				
Stillbirth rate per 1000 births	16.5	18.3	10.1	22.4	15.2	1.02	(0.74-1.40)	0.83	(0.28-2.44)
Neonatal mortality rate per 1000 live births	20.9	25.2	21.8	18.3	16.5	0.88	(0.71-1.08)	0.67	(0.32-1.39)

Shah More, N., Bapat,U., Das,S., Barnett,S., Costello,A., Fernandez,A., Osrin,D. (2009). Inequalities in maternity care and newborn outcomes: one-year surveillance of births in vulnerable slum communities in Mumbai. International Journal of Equity in Health. 2009; 8 (21)

Associations of violence during maternity with a range of speculative indicators

	Did not report violence (N 1766)	Reported violence (N 373)	aOR	(95% CI)
Place of delivery				
Institutional delivery	1591 (90)	333 (89)	1	
Home delivery	175 (10)	40 (11)	0.866	(0.57, 1.31)
Preterm index infant				
Term	1708 (97)	358 (96)	1	
Preterm	49 (3)	12 (3)	1.218	(0.61, 2.42)
Missing	9 (<1)	3 (1)		
Birth weight of index infant *				
Normal	1292 (73)	251 (67)	1	
Low birth weight	295 (17)	77 (21)	1.246	(0.92, 1.68)
Missing	179 (10)	45 (12)		
Sex of index infant				
Boy	916 (52)	197 (53)	1	
Girl	841 (48)	173 (47)	0.924	(0.73, 1.17)
Missing	9 (<1)	3 (<1)		
Total	1766 (100)	373 (100)		

Das,S., Bapat,U, More, N.S, Alcock G, Joshi W, Pantvaidya S and Osrin,D, Intimate partner violence against women during and after pregnancy: a cross-sectional study in Mumbai slums, BMC Public Health, 2013; 13:817.


NO!

Verbal autopsy

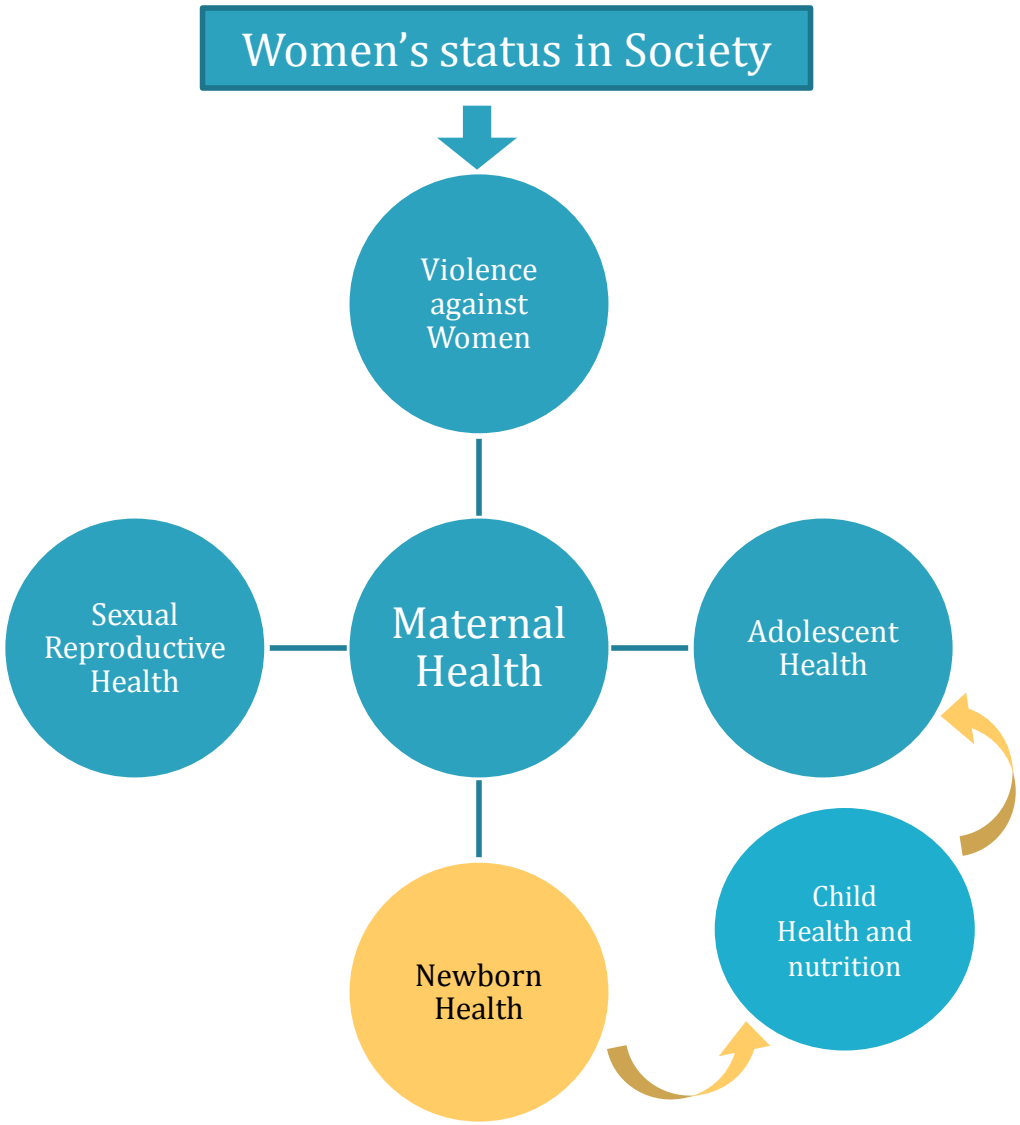
Table 1. Causes of stillbirth and newborn death, based on clinician review of verbal autopsy

Stillbirth	**Fresh**		**All**			
	Count	(%)	Count	(%)		
Associated with obstetric complication	41	(63)	50	(48)		
Multiple pregnancy	3	(5)	9	(8)		
Prematurity	4	(6)	4	(4)		
Accident or external condition	2	(3)	3	(3)		
Congenital anomalies	1	(2)	3	(3)		
Other	2	(3)	4	(4)		
Unclassifiable	12	(18)	32	(30)		
Total	65	(100)	105	(100)		
Neonatal death	**Early**		**Late**		**All**	
	Count	(%)	Count	(%)	Count	(%)
Asphyxia	21	(24)	0	(0)	21	(18)
Asphyxia associated with obstetric complication	11	(13)	1	(3)	12	(10)
Prematurity	27	(31)	0	(0)	27	(23)
Severe infection	5	(6)	20	(69)	25	(22)
Congenital anomalies	5	(6)	2	(7)	7	(6)
Other	10	(11)	0	(0)	10	(9)
Unclassifiable	8	(9)	6	(21)	14	(12)
Total	87	(100)	29	(100)	116	(100)

Bapat U, Alcock G, More N, Das S, Joshi W, Osrin D. Stillbirths and newborn deaths in slum settlements in Mumbai, India: a prospective verbal autopsy study. BMC Pregnancy and Childbirth. 2012; 12:39.

Our learnings

A newborn doesn't stand alone…



Programs at SNEHA

Maternal and Newborn Health

Assisted over 21,000 referred pregnant women with potential complications to deliver safely through SNEHA-initiated referral networks

Child Health and Nutrition

Screened about 24,000 children under 3 years for malnutrition in Dharavi

Sexual and Reproductive Health

Provided health and life skills education to over 10,000 adolescents and youth

Prevention of Violence Against Women and Children

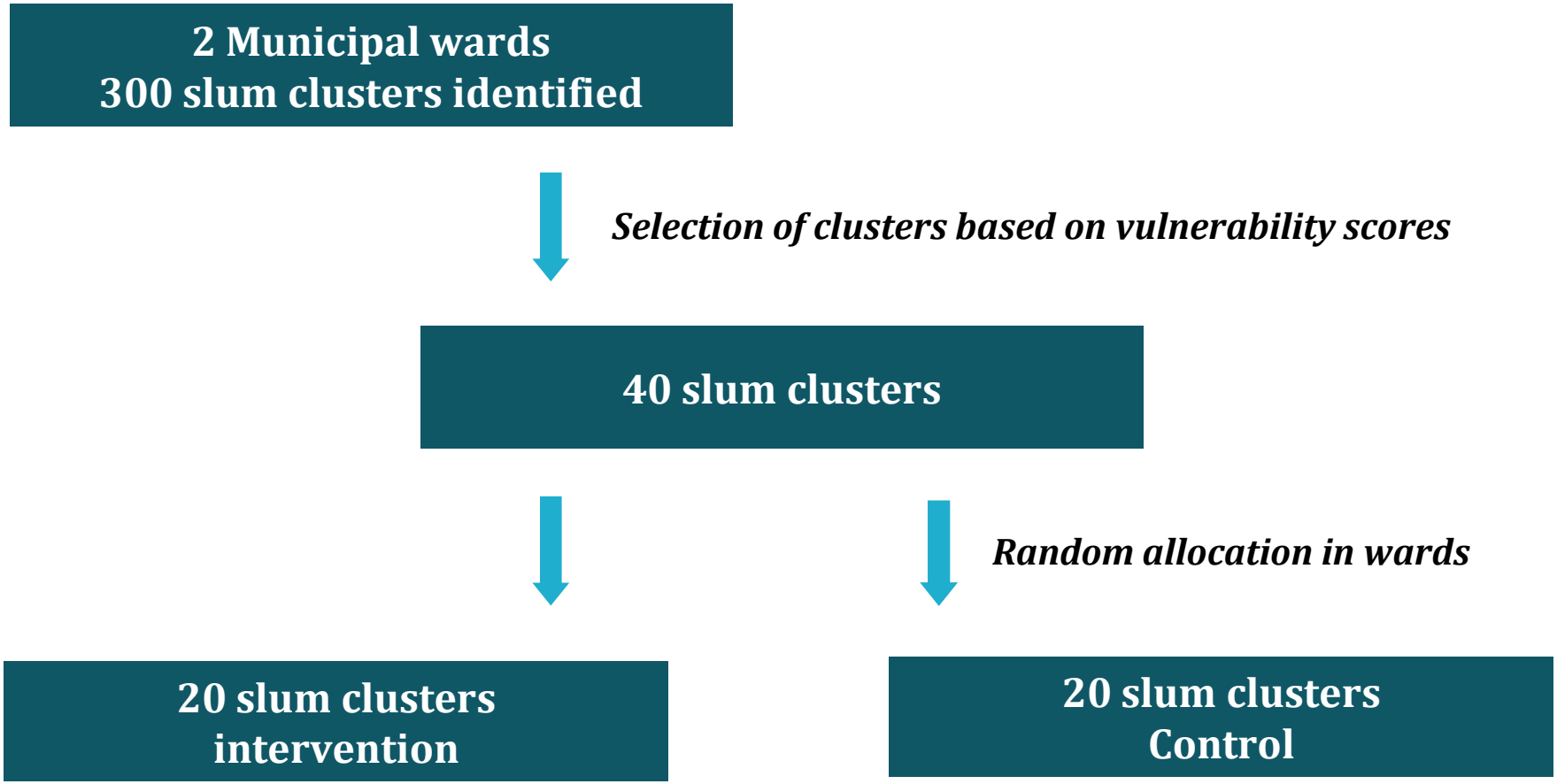
Addressed over 6000 cases of violence

COMMUNITY RESOURCE CENTRES TO IMPROVE THE HEALTH OF WOMEN AND CHILDREN IN MUMBAI SLUMS

2011-2016

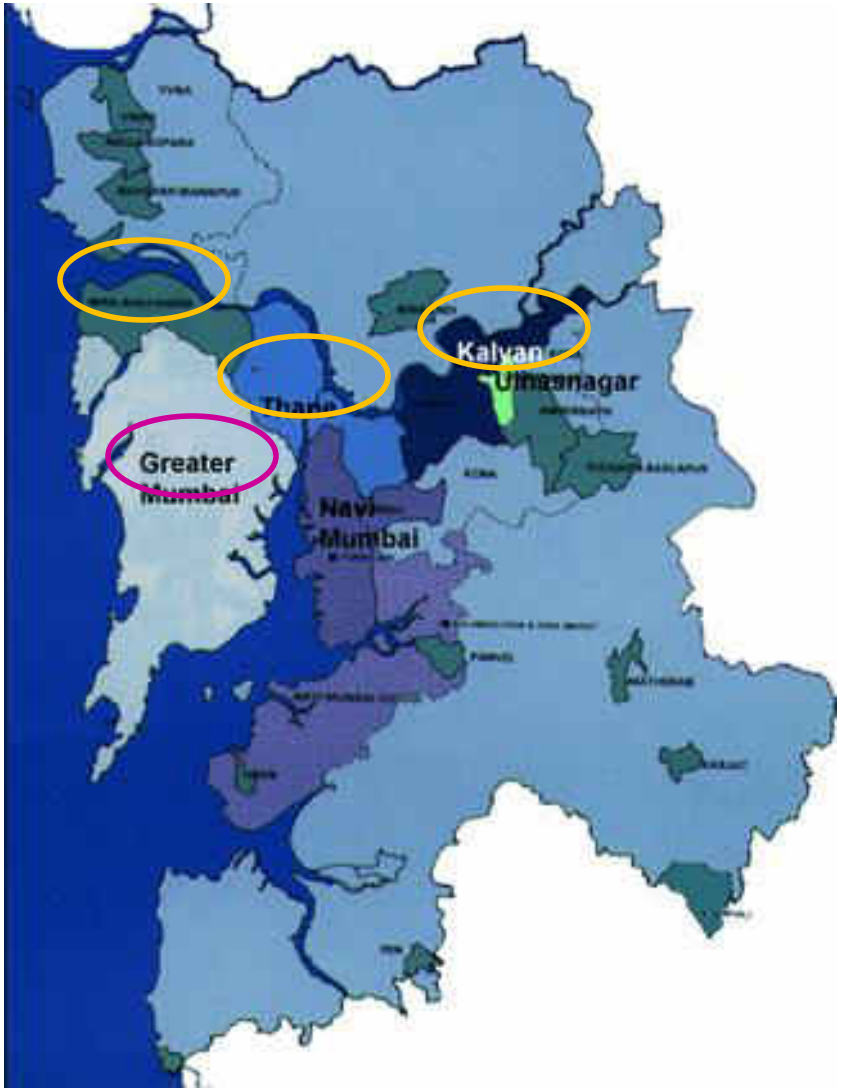
A cluster randomized controlled trial of a complex intervention

Trial design



SNEHA 2015

SNEHA Coverage

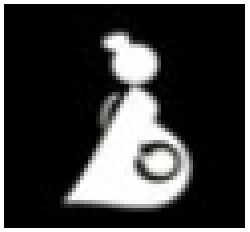


Our outreach - 760,000 disadvantaged people in Mumbai Metropolitan Region

Greater Mumbai	SNEHA's outreach
Dharavi	300,000
Ghatkopar	4,000
Kandivali	125,000
M/E Ward	60,000
Santa Cruz	50,000
Malvani	15,000
Parel	50,000

Neighboring Regions	SNEHA's outreach
Kalyan Dombivali	63,000
Mira Bhayander	34,000
Thane	63,000

Working with four municipal corporations Community and Facilities



Access to Primary Care

Referrals to higher level centers of care

Key Intervention Areas

Community Level

- Improvement of care-seeking behaviour in high-priority vulnerable slums

Facility Level

- Facilitating provision of quality primary care for pregnant women in the public system
- Promotion of referrals of high-risk pregnant women to appropriate public care centres
- Enhancing clinical skills of public care providers

Maternal and Newborn Health

Improving Public Infrastructure

What we have achieved:

- Assisted over 21,000 referred pregnant women with potential complications to deliver safely through SNEHA-initiated referral networks
- Reached out to nearly 4,500 pregnant women through home visits, providing periodic counselling during pregnancy and after childbirth
- Trained over 3,000 public healthcare providers(doctors and nurses) on clinical aspects of maternal and neonatal care and effective communication
- Trained over 2,900 government outreach workers over the years to address maternal and neonatal health in communities
- **Policy changes for primary health care, training and referral**
- **Inter corporation and inter government department coordination meetings**
- **Public, private and corporate partnerships - PPPP**

Recommendations

- Saving newborn lives is still not a high priority in Mumbai
- Need to improve availability and quality of care of normal mother and newborn at the primary level
- Quality of care to be monitored, both in the public and private sector
- Need to establish a robust system of referral and emergency obstetric care services
- Directory of neonatal beds to be made available to ensure care of every sick newborn
- Capacity building of community health workers for
  - intensive outreach of vulnerable communities for behaviour change
  - Facilitating community group and volunteer actions
- Public private partnership to support the gaps in healthcare services

Society for Nutrition, Education and Health Action

SNEHA, Mumbai

Publications

- **Fernandez A, Osrin D.** The city Initiative for Newborn Health. Plos Medicine 2006; Vol. 3, 9:e339.
- **More, N.S., Bapat,U., Das,S., Patil,S., Porel,M., Vaidya,L., Koriya,B., Barnett,S., Costello,A.,. Fernandez,A, Osrin,D.** (2008). Cluster-randomised controlled trial of community mobilisation in Mumbai slums to improve care during pregnancy, delivery, postpartum and for the newborn. *Trials* 9, 7. ISSN: 1745-6215
- **Shah More, N., Alcock,G., Bapat,U., Das,S., Joshi,W., Osrin,D. (2009).** Tracing pathways from antenatal to delivery care for women in Mumbai, India: cross-sectional study of maternity in low-income areas. *International Health* 1, 71-77
- **Shah More, N., Bapat,U., Das,S., Barnett,S., Costello,A., Fernandez,A., Osrin,D.** (2009). Inequalities in maternity care and newborn outcomes: one-year surveillance of births in vulnerable slum communities in Mumbai. *International Journal of Equity in Health* 8(1)
- **More N, Bapat U, Das S, Osrin, D, et al.** Community Mobilization in Mumbai Slums to Improve Perinatal Care and Outcomes: A Cluster Randomized Controlled Trial. PLoS Med 9(7): e1001257.
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- Das S**, More NS,** Bapat U, L Chordhekar, Joshi W, Osrin D. Prospective study of determinants and costs of home births in Mumbai slums. *BMC Pregnancy and Childbirth 2010, 10:38.*
- **Shah More N, Alcock G, Das S, Bapat U, Joshi W, Osrin D.** Spoilt for choice? Cross-sectional study of care-seeking for health problems during pregnancy in Mumbai slums. *Global Public Health 2010.*
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- **Osrin D, Das S, Bapat U, Alcock G, Joshi W, Shah More N.** A rapid assessment scorecard to identify informal settlements at higher maternal and child health risk in Mumbai. *International Journal of Urban Health, ISUH.*
- **Bapat U, Alcock G, More N, Das S, Joshi W, Osrin D.** Stillbirths and newborn deaths in slum settlements in Mumbai, India: a prospective verbal autopsy study. BMC Pregnancy and Childbirth. 2012; 12:39.
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- **More N, Osrin D, et al.** Community resource centres to improve the health of women and children in Mumbai slums: study protocol for a cluster randomized controlled trial. Trials 2013; 14:132
- **Neuman A, Alcock G, Azad K, et al.** Prevalence and determinants of caesarean section in private and public health facilities in underserved South Asian communities: cross-sectional analysis of data from Bangladesh, India and Nepal. BMJ Open2014;4:e005982.
- **Bentley A, Das S, Alcock G, et al.** Malnutrition and infant and young child feeding in informal settlements in Mumbai, India: findings from a census. Food Sci Nutr 2015;3(3):257-71.

Training programs

Events

Individual home visits


ZARIN