RESEARCH COMMUNICATION

Tobacco Control Among Disadvantaged Youth Living in Low-income Communities in India: Introducing Project ACTIVITY

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Abstract

    <u>Objective</u>: **To provide an overview of Project ACTIVITY, a group randomized intervention trial designed to test the efficacy of a community-based, comprehensive approach to tobacco control for youth (10-19 years) living in low- income communities in India. In doing so, details regarding baseline characteristics of the study sample are provided. <u>Methods</u>: Fourteen slum communities in Delhi, India were matched and randomized to intervention (n=7) and control (n=7) conditions. The intervention included multiple strategies to promote prevention and cessation of tobacco use among youth. A census was conducted in selected blocks in all study communities (n=78,133), as well as a baseline survey of eligible youth (n=6,023). Main outcomes measures on the survey included ever use, past six months use and current use of multiple forms of tobacco. Mixed effects regression models were used to examine differences between study conditions in (a) demographic characteristics and (b) the prevalence of tobacco consumption. <u>Results</u>: Census data revealed that 31.9% of sampled population was in the age group of 10-19 years. No differences between study conditions in demographic characteristics (e.g. age, gender, religion, education, and occupation) among either adults or youth were noted (p>0.05). The baseline survey data revealed the prevalence of ever tobacco use among youth was 7.99%, past six months use was 5.70%, and current use was 4.88%. No differences between study conditions in these prevalence rates were observed, either (p>0.05). <u>Conclusion</u>: The two study conditions in Project ACTIVITY are comparable. The evaluation should provide a robust test of this intervention's efficacy.**

Key Words: Tobacco - Delhi urban slums - census data - community-based intervention - disadvantaged youth

Introduction

    Health and socio-economic developments in India are so closely intertwined that it is impossible to achieve one without the other. Although economic development has contributed to the health of many in this setting, the urban poor have yet to receive the benefits of this growth. Worldwide, and in India, the consumption of tobacco products is the behavior with the single greatest impact on health inequalities (Jarvis and Wardle, 1999). Without concerted action to reduce tobacco use in this sub-group, health disparities will widen further.

    Recent studies from India confirm that tobacco is consumed most by adults who are socially and economically marginalized (Neufield et al., 2004; Subramanian et al., 2004; Sorenson et al., 2005). There is a dearth of similar studies among disadvantaged young people in this setting, by comparison. Over the next decade, cigarette smoking alone is expected to contribute to 1 million deaths annually (Jha et al., 2008). The figure underestimates the overall burden, as tobacco is consumed widely in other forms in India.

    India is home to the most adolescents in the world (UNICEF, 2004). Out of these, 60-80% live in low resource settings (Plan, 2005). In India, the onset of tobacco use occurs in adolescence, with an estimated 5500 young people initiating use of tobacco every day (Patel, 1999). Global Youth Tobacco Survey (GYTS 2006), estimates suggest 3.8% of school-going youth in India currently smoke cigarettes and 11.9% currently use other forms of tobacco (Sinha et al., 2008). Youth attending Government schools (lower SES) use tobacco at rates twice as high as youth attending Private schools (higher SES) in this setting (Mathur et al., 2008). No data are yet available regarding the prevalence of tobacco use among non-school going youth here.

    There is a need for low-cost, community-based tobacco use interventions for socio-economically disadvantaged persons living in low-income communities in India. This paper provides an overview of one such intervention: Project ACTIVITY. Project ACTIVITY (Advancing Cessation of Tobacco Use in Vulnerable Indian Tobacco using Youth) is a group-randomized intervention trial designed to test the efficacy of a

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community-based, comprehensive tobacco control intervention for youth (10-19 years) living in low income communities in Delhi, India. Apart from describing the settings and participants, the paper provides a summary of the selection methods used to identify the 14 slum communities for the study and the intervention strategies being designed and implemented. By way of analysis, it compares and contrasts data collected through a census of communities and a baseline survey of youth. Comparisons are made between the intervention and control conditions to determine if these study conditions are comparable at the beginning of this trial.

Materials and Methods

Study design

Project ACTIVITY is a group-randomized intervention trial. In 2009, 14 communities were recruited to participate in the trial, matched, and randomized to receive the intervention (n=7) or serve as a control (n=7). Repeated surveys will be administered to a cohort of youth (n>5,000) randomly selected from these communities to evaluate the efficacy of the intervention. In 2009, a census of communities was conducted to identify these youth. Once identified, a baseline survey was administered to them to collect data on tobacco use behaviors.

Participants

Low income communities: Each community includes a (a) slum (also called "Jhuggi-Jhopri or JJ cluster", which means small roughly built house or shelter usually made of mud, wood or metal, having a thatch or tin sheet roof covering; and a (b) resettlement colony, which includes households that have been resettled from their original settlements. The government provides more infrastructures (e.g., water and electricity) in these resettlement colonies, and the houses there are made of more permanent materials, like concrete. The socio-economic profile of the resettlement colonies is slightly better than the slums (Basic Amenities and Clearance Bill, 2002).

These communities were recruited systematically from a list of registered resettlement colonies (n=44) and JJ clusters (n=1079) procured from the Municipal Corporation of Delhi and the Department of Health and Family Welfare. To be eligible for the study, communities had to: (1) include a resettlement colony with a neighboring JJ cluster; (2) reside within a radius of 25 kilometers from the research office; (3) have more than 500 households in the resettlement colony and the JJ cluster, each; (4) not be slated for demolition during the study period; and (5) have a known NGO working in the community willing to participate. The local NGOs provide a channel for establishing connectivity with people residing there, so are integral to implementation of the trial.

Out of sixteen communities which satisfied these criteria, 14 were randomly selected for the study. Communities were matched based on similar demographic profiles (e.g., ethnicity, religion, language, occupation of adults, number of households- population per block;

school going/non-school going children living with family) and randomized to study condition. During the census, one matched pair of communities proved too difficult to work with. This pair was replaced by the last two eligible communities who were randomized, again, to study condition.

Each community is quite large, with the total population exceeding 70,000 persons in many of them. To ensure the feasibility of the study, four blocks in each community (2 blocks each in the JJ cluster and the resettlement colony), each with a minimum of 200 households, were randomly selected for the census. This included 15,365 households and 78,133 individuals living in them. The census took about two months to complete.

Youth (10-19 years): Once the census was complete, a random sample of 300 households in each community (150 households each in the JJ cluster and the resettlement colony) was selected for the baseline survey. To be eligible for the survey, a household had to have at least one young person (10-19 years) residing in them. A total of 8205 youth were eligible to participate in the survey. Of these, 6023 (73.4%) participated. Non-participants included parent refusals (1.4%), youth/child refusals (0.6%), absentees (11.1%), and youth who could not be traced after the census had been completed (13.5%). At least three attempts were made to survey each young person. Youth who participated in the survey were not significantly different from youth who did not, across key socio-demographic characteristics, like age, gender, religion, and school-going status (p>0.05).

Data Collection

Census: A census information sheet was used to collect census data from each of the 14 communities. This census sheet was based on the census format used in earlier phase of this study-a demonstration project with two slums of Delhi (Arora et al., 2010). Information was sought from each selected house with regard to: household address, family size, gender, age, education level of all family members, religion and occupation status of each family member. The information was gathered from the head of the family by research staff persons who were trained to collect these data. Once collected, the data were entered; they were cross checked with field notes. Maps of these communities were also created to identify households eligible for the main study. The maps and census information were not previously available for use (e.g., from the Municipal Corporation of Delhi and the Department of Health and Family Welfare, where lists of slum communities were obtained), so were the first step in identifying and describing these communities.

Baseline survey: The baseline survey of youth was based on similar surveys conducted worldwide and in India. The survey was pilot tested with 100 youth (50 each from a JJ cluster and a resettlement colony) in one community before implementation, to ensure its feasibility and reliability. The survey was administered as an interview. Each interview was conducted in Hindi (the local language) and lasted about 40 minutes. The
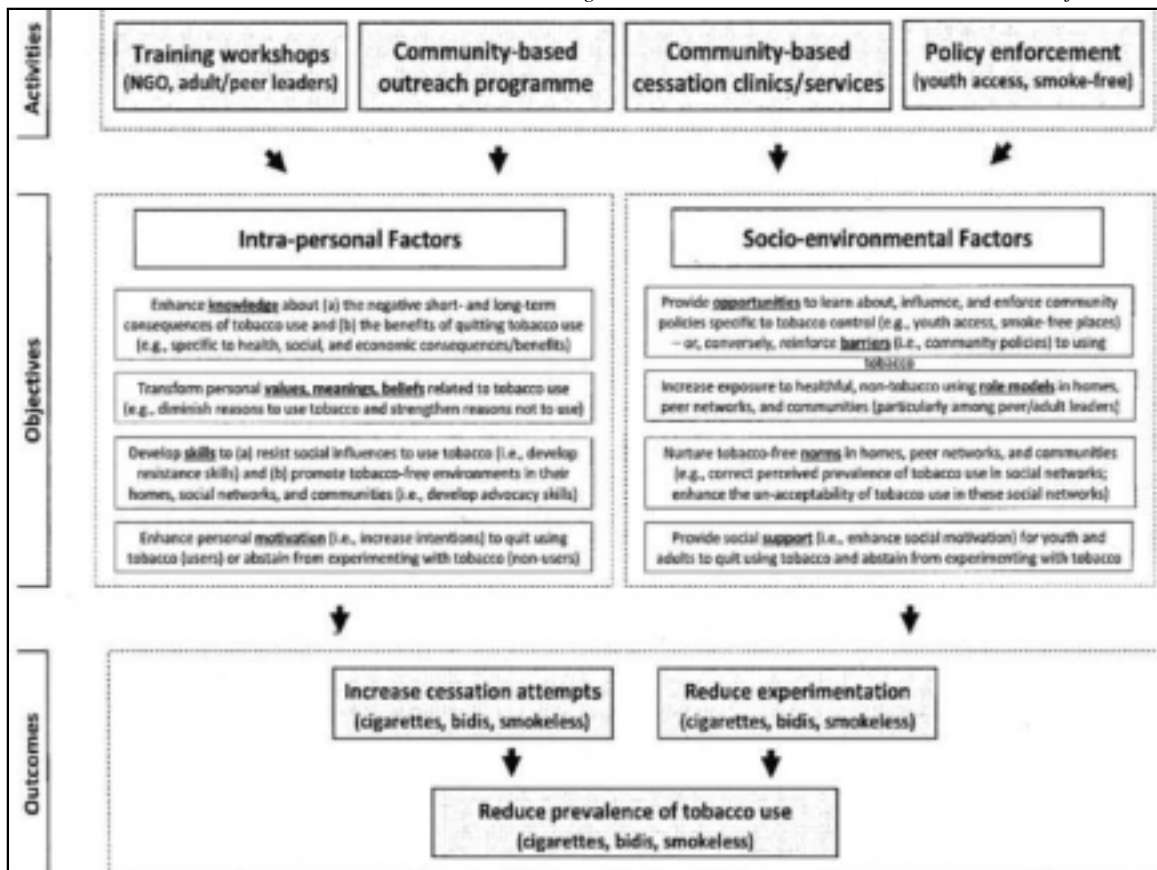
Figure 1. The Project ACTIVITY Intervention Model used in the Present Study

interviews were conducted outside the home, in a private space inside local community centers. Both literate and illiterate youth were accommodated during the interview. Research staff visited the home to schedule the interview, which was conducted as per the convenience of the interviewee. Informed, active consent was taken from parents and youth for participants between the ages of 10 and 17 years. No parental consent was taken from participants older than 17 years, though informed, active consent from the participant was taken. Consent documents were read aloud to illiterate parents and participants, as needed. These consent procedures were approved by the appropriate ethics boards in India and the United States (U.S).

Measures

The main outcome measures on the survey included rates of ever use (i.e. lifetime), past 6 months use, and past 30 days use (i.e., current) of tobacco products in three forms – smoking (e.g., cigarettes or bidis), chewing (e.g., gutkha), or other smokeless products (e.g., paste). Current use of tobacco was measured by the questions: "During the last 30 days, did you (chew tobacco in any form?) (smoke cigarettes or bidis?) (take tobacco in any other form?)". Past six months use was measured by the questions: "In the past six months, have you (smoked a whole cigarette/bidi?) (chewed tobacco in any form?) (taken any other form of tobacco?)". Ever use of tobacco was measured by the questions: "Have you ever used, tried or experimented with (smoking forms of tobacco i.e. cigarettes or bidis)? (chewing forms of tobacco ?) (tobacco in any other form?)". These response categories were

collapsed to create a dichotomous variable: "yes" or "no by clubbing the responses with "no", "don't know", and "refused to answer" together in "no" category.

Additionally, intentions and susceptibility associated with tobacco use among young people in these communities were assessed. Intent to use tobacco included the following items: "Do you think you will try cigarettes and bidis or chewing tobacco or other forms of tobacco in the (next one month?) (six months?) (when you are an adult (>=21 years old)?)". Susceptibility included the following items: "If any of the cigarettes and bidis or chewing tobacco or other forms of tobacco being offered by (close friend?) (family member?) (anyone, apart from family member and friends?) will you use it?

To assess the intentions, all "yes" responses on all three items of intentions for smoking, chewing and other forms were clubbed to form variables: "smoking tobacco", "chewing tobacco" and "other tobacco" respectively for 'next one month', 'next six months' and 'when you are an adult (>=21 years old)'. Susceptibility to tobacco use was measured by combining "yes" responses on all three items of susceptibility for smoking, chewing and other forms of tobacco to form variables: "smoking tobacco", "chewing tobacco" and "other tobacco" respectively for 'close friend', family member', 'anyone, apart from family member and friends'.

Intervention Design

A comprehensive, community-based tobacco intervention for youth, with a focus on tobacco prevention and cessation, was conceptualized for Project ACTIVITY (Figure 1). This model is based on earlier work of this

research team among school going youth in India (Perry et al.,2006, Perry et al., 2009) adapted for youth in these slums. Initial pilot testing of this model was conducted in an earlier demonstration project in the slums. This model was also refined in Focus Group Discussions that were conducted during a formative research phase of the current project (Arora et al., 2010).

The four intervention strategies included (a) training workshops for partner NGOs, youth peer leaders, and adult community leaders: Peer Leaders, adult community leaders and NGO personnel were identified and trained to facilitate the intervention programme and serve as intervention implements and important change agents in the community; (b) community-based interactive activities and outreach programmes: The first year of the intervention included six interactive activities, which make use of films, street plays, rally, pamphlets, comic book, situation cards and stickers. Repeated sessions for each activity are being carried out at different strategic locations to cover the maximum number of students enrolled in the study; (c) community-based cessation clinics/services will be established in the second year to provide access to group counseling services and face-to-face counseling for tobacco cessation; and (d) enforcement of key provisions of the recent Tobacco Control Act in India (Tobacco Control Act of India,2003) reducing youth access to tobacco and supporting smoke-free public places. Engagement of community leaders in monitoring and facilitating enforcement of these laws under this intervention model will positively change community norms and provide ownership and sustainability to this intervention.

These strategies are being used to influence intra-personal and socio-environmental factors related to tobacco use among youth in these settings (Perry, 2006) to, in turn, reduce the prevalence of tobacco use in multiple forms (e.g., cigarettes, bidis, smokeless tobacco). The model is informed, as well, by other comprehensive approaches to tobacco control in the West (McDonald et al., 2009, Backinger et al., 2003, USDHHS, 2010) .The intervention will be implemented over a two year period in the communities, from 2009 to 2011.

In the control groups, youths and adults of all communities received vision care services as a token of participation in the baseline survey. In total, nearly1569 youth and adults in control communities were given vision care. These vision care services were provided free of cost to the community by the research team in collaboration with the community ophthalmology department of All India Institute of Medical Sciences (AIIMS), New Delhi, India.

Data Analysis

Mixed effects regression models were used to examine differences in socio-demographic factors and tobacco use between the intervention and control conditions. These models are appropriate for studies like these, where subjects are sampled within communities, which were

Table 1. Demographic Characteristics of Adults aged 20-80+ Years at Census, by Trial Condition; Delhi, India

		Intervention (N=20,732)			Control (N=21,935)			P-value*
		Frequency	%	95% CI*	Frequency	%	95% CI*	
Age Group	20-29	7,830	37.8	36.2-39.2	7,973	36.3	34.9-37.7	0.132
	30-39	5,627	27.0	25.0-29.1	6,152	27.9	25.9-29.9	0.537
	40-49	3,923	18.9	17.5-20.3	4,415	20.2	18.8-21.6	0.219
	50-59	1,756	8.5	7.67-9.35	1,747	7.99	7.16-8.82	0.390
	60-69	1,254	6.0	5.38-6.69	1,254	5.9	5.09-6.39	0.529
	70-79	256	1.2	0.97-1.52	309	1.4	1.15-1.70	0.357
	80+	86	0.4	0.28-0.56	85	0.4	0.25-0.53	0.795
Gender	Male	11,186	54.0	53.3-54.5	11,840	54.0	53.3-54.6	0.963
	Female	9,546	46.0	45.4-46.7	10,095	46.0	45.4-46.7	0.963
Religion	Hindu	18239	88.3	78.6-98.1	18,706	84.8	75.1-94.5	0.612
	Muslim	2,197	10.5	9.69-20.0	3,001	14.1	4.56-23.6	0.595
	Sikh	269	1.1	0.21-2.01	144	0.7	-0.22-1.59	0.515
	Others	27	0.1	-0.10-0.38	84	0.4	0.15-0.64	0.144
Education	Illiterate	6,846	32.8	25.8-39.6	6,592	31.8	24.9-38.7	0.845
	Literate no school	20	0.1	-0.02-0.23	35	0.2	0.05-0.28	0.304
	Primary	2,438	12.6	11.3-13.9	2,675	13.0	11.8-14.3	0.626
	Middle	3,656	17.8	16.7-21.7	3,734	17.0	15.7-20.7	0.551
	Secondary	3,986	20.6	18.4-22.8	4,187	20.5	18.3-22.7	0.945
	Higher secondary	1,459	7.6	6.08-9.13	1,793	8.9	7.39-10.4	0.236
	Graduate	1,155	6.0	4.44-7.58	1,326	6.7	5.10-8.23	0.563
	Post Graduate	166	0.9	0.56-1.15	180	0.90	0.61-1.20	0.821
Occupation	Unskilled	2,641	12.6	10.1-15.0	2,635	11.92	9.47-14.6	0.711
	Semi Technical	1,967	9.6	7.65-11.4	2,150	9.81	7.92-11.7	0.849
	Government Job	597	3.1	1.85-4.26	684	3.14	1.94-4.35	0.916
	Self Employed	1,210	5.9	4.94-6.76	1,271	5.85	4.94-6.76	0.999
	Professionals	49	0.2	0.14-0.34	39	0.18	0.08-0.28	0.408
	Others	109	0.6	0.29-0.81	101	0.46	0.20-0.72	0.637
	Private Job	3296	33.2	27.5-38.9	3,476	33.5	27.8-39.2	0.941
	Unemployed	10,863	52.5	51.2-53.7	11579	52.8	51.6-54.0	0.687

*95%CI and p-value test for differences between study conditions using a mixed effect regression model with community specified as the nested random effect

Table 2. Demographic Characteristics of Youths aged 10-19 Years at Census, by Trial Condition; Delhi, India

		Intervention (N=9,588)			Control (N=10,388)			P-value*
		Frequency	%	95% CI*	Frequency	%	95% CI*	
Age Group	10-14	4689	48.75	46.93- 50.97	5194	49.85	48.06- 51.64	0.399
	15-19	4899	51.25	49.43- 53.07	5194	50.15	48.36- 51.94	0.399
Gender	Male	5036	52.50	51.28-53.73	5612	53.97	52.77-55.16	0.094
	Female	4552	47.50	46.27-48.72	4776	46.03	44.84-47.23	0.094
In School	Yes	6726	70.31	66.56-74.07	7391	71.18	67.44-74.93	0.747
	No	2862	29.69	25.93-33.44	2997	28.82	25.07-32.56	0.747
Religion	Hindu	8193	85.40	75.03- 95.76	8595	82.94	72.57- 93.30	0.742
	Muslim	1301	13.71	3.37-24.06	1710	16.20	5.86-26.54	0.739
	Sikh	86	0.80	0.13-1.46	61	0.63	-0.04-1.3	0.718
	Others	8	0.09	-0.09-0.28	22	0.23	0.04-0.41	0.308
Literacy Level	Literate	8884	94.43	92.12-9674	9634	94.76	92.46-97.07	0.840
	Illiterate	578	5.58	3.27-7.88	5.24	5.27	2.93-7.54	0.840
Occupation	Unskilled workers	206	2.09	1.58-2.61	168	1.61	1.10-2.11	0.1875
	Semi Technical	126	1.38	0.85-1.92	161	1.56	1.01-2.08	0.6751
	Government Job	7	0.07	0.01-0.13	11	0.11	0.05-0.16	0.4390
	Self Employed	44	0.45	0.26-0.65	45	0.56	0.34-0.73	0.5597
	Others	8	0.09	0.02-0.16	7	0.07	0.00-0.14	0.7007
	Private Job	260	2.68	2.11-3.25	298	2.87	2.31-3.44	0.6291
	Unemployed	8937	93.24	92.23-94.26	9688	93.26	92.26-94.26	0.9813

*95%CI and p-value test for differences between study conditions using a mixed effect regression model with community specified as the nested random effect

randomized to study condition (Murray, 1998, Raudenbush et al., 2002). Community was specified as a nested random effect in these models (Raudenbush et al., 2002). These models were used to test whether the distribution of various socio-demographic characteristics (i.e., age, gender, religion, education, occupation and school going status) was different between study conditions, based on data collected in the census and the baseline survey. Differences in the prevalence of tobacco use among youth, as well as intentions to use and susceptibility to use, were also examined by study condition, based on data collected in the baseline survey. The analyses of intentions and susceptibility do not include the sample of current users, given the way the questionnaire was designed.

Results

Census

Most of the population (45.8%) in these communities is young, between the ages of 10 and 29 years (see Figure
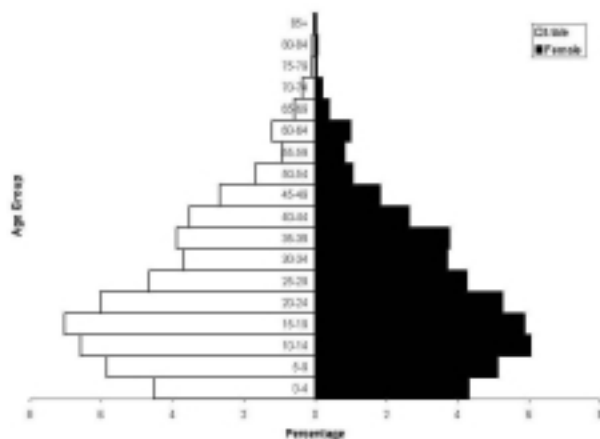

Figure 2. Age Distribution of Communities at Census Survey; Delhi, India, 2009 (n=14 communities)

2). About one-third (31.9%) of the people residing in these low income communities are between the ages of 10 and 19 years, the target population for this project. There are slightly more males, than females, in these communities. The narrow top of this population pyramid indicates that life expectancy is short here, about 70 years.

Table 1 depicts the socio-demographic characteristics of 42667 adults (20-80+ years), who participated in the census, by study condition. No significant differences in age, gender, religion, education or occupation were observed between conditions (p>0.05). Most adults were Hindu. About one-third of the adults were illiterates who have never attended school. Less than one-half of the adults were employed, as females were mostly unemployed. Most were employed as either unskilled workers, semi-technical skilled workers, or were in private jobs. Unskilled workers included: labourers, rickshaw pullers and rag pickers; semi-technical skilled workers included: electricians, carpenters; and private jobs included working as sales man, working in a hotel and call centre employees.

Table 2 depicts the socio-demographic characteristics of 19976 youth (10-19 years) .The average number of youth (10-19 years) per household in both study conditions was 2 (p >0.05) (results not shown). No significant differences in age, gender, religion, education or occupation were observed between study conditions among youth, either (p>0.05). Most youth self-reported as Hindu. Almost three-quarters of youth were currently going to school, and more than 90% were literate. Less than 10% of these youth were employed. Among these, most were either unskilled workers or did private jobs. Unskilled work for youth included: labourers and dholwala (local drummers), while private jobs included working as sales men and working in a hotel.

Baseline survey

Table 3. Demographic Characteristics of Youth aged 10-19 Years at Baseline Survey, by Trial Condition; Delhi

		Intervention (N=3034)			Control (N=2989)			P-value*
		Frequency	%	95% CI*	Frequency	%	95% CI*	
Age Group	10-14	1582	52.17	50.02-54.31	1569	52.51	50.35-54.66	0.826
	15-19	1452	47.83	45.69-49.98	1420	47.49	45.34-49.65	0.826
Gender	Male	1565	51.59	49.70-53.47	1566	52.39	50.49-54.29	0.556
	Female	1469	48.41	46.53-50.30	1423	47.61	45.71-49.51	0.556
In School	Yes	2369	78.16	75.72-80.60	2411	80.57	78.12-83.02	0.171
	No	662	21.84	19.40-24.28	578	19.43	16.98-21.88	0.171
Religion	Hindu	2596	85.51	75.32-95.69	2458	81.85	71.66-92.04	0.619
	Muslim	394	12.95	2.49-23.42	472	16.27	5.80-26.73	0.661
	Sikh	39	1.35	0.17-2.53	35	1.30	-0.08-2.28	0.767
	Others	5	0.17	-0.31-6.59	24	0.79	0.31-1.28	0.078

*95%CI and p-value test for differences between study conditions using a mixed effect regression model with community specified as the nested random effect

Table 4. Tobacco Use, Intention and Susceptibility at Baseline Survey, 2009 in Project ACTIVITY, by Trial Condition {mixed-effects regression models} (n=6023)

		Intervention N=3034		Control N=2989		Prevalence	P value
		Prevalence	95% CI	Prevalence	95% CI	Ratio	
Ever Use	Any tobacco	7.35	5.99- 8.70	8.63	7.27- 9.99	0.85	0.189
	Smoking tobacco	5.12	4.09- 6.15	5.43	4.39- 6.46	0.94	0.678
	Chew tobacco	4.59	3.48- 5.69	5.94	4.84- 7.05	0.77	0.088
	Other tobacco	0.86	0.46- 1.25	1.44	1.04- 1.84	0.73	0.043
Past Six Month Use	Any tobacco	5.26	4.06- 6.46	6.14	4.93- 7.34	0.86	0.314
	Smoking tobacco	3.22	2.30- 4.14	3.53	2.61- 4.45	0.93	0.638
	Chew tobacco	3.77	2.65- 4.89	4.65	3.52- 5.77	0.81	0.278
	Other tobacco	0.63	0.33- 0.93	0.80	0.50- 1.11	0.79	0.413
Current Use	Any Tobacco	4.36	3.22- 5.50	5.41	4.27- 6.56	0.81	0.203
	Smoking tobacco	2.54	1.76- 3.33	2.87	2.08- 3.66	0.89	0.564
	Chew tobacco	3.32	2.26- 4.37	4.32	3.26- 5.37	0.77	0.189
	Other tobacco	0.50	0.21- 0.78	0.50	0.21- 0.78	0.93	0.989
Intention†	Any tobacco	10.75	2.88- 18.6	3.75	-3.95- 11.5	2.87	0.211
	Smoking tobacco	6.94	1.99- 11.9	2.63	-2.19- 7.46	2.64	0.220
	Chew tobacco	2.39	-1.62-6.41	2.47	-1.48- 6.41	0.98	0.980
	Other tobacco	2.53	-0.97-6.03	0.00	-3.46- 3.46	--	0.311
Susceptibility†	Any Tobacco	3.80	-0.44-8.04	3.66	-0.50- 7.82	1.04	0.963
	Smoking tobacco	1.22	-1.71-4.15	2.41	-0.50- 5.32	0.51	0.570
	Chew tobacco	1.23	-1.82-4.28	2.43	-0.58- 5.44	0.51	0.580
	Other tobacco	1.21	-0.52-2.95	0.00	0.00- 1.73	--	0.330

95%CI and p-value test for differences between study conditions using a mixed effect regression model with community specified as the nested random effect; †Only for the respondents who ever used tobacco but not using it currently in any form

Table 3 provides the demographic distribution of the youth who participated in the administration of the baseline survey. As noted above (see Participants), these youth did not systematically differ from those who did not participate, across key socio-demographic characteristics (p>0.05). Among those who participated, no differences between study conditions were observed in regards to age, gender, religion, or education. Like those that participated in the census, about three-quarters of these youth attended school. Only 43% of youth responded for family income as most of the youth did not know the income of the family (53%) and few of them did not respond and 7% responded for individual income as most of the youth were not engaged in any kind of occupation. Using the data that were available, overall average family income was estimated approximately at 96USD per month and individual (i.e. youth) income was 58USD per month.

Table 4 shows no significant differences in the prevalence of tobacco use were observed between conditions (p>0.05). This result was similar for ever use,

past six month use, and current use of tobacco, as well as for tobacco that is chewed, smoked, or used in another form. No significant differences in prevalence of intentions and susceptibility of ever users (excluding current users) was observed by study conditions, either (p>0.05).

The baseline survey revealed that the prevalence of ever use of any type of tobacco among youth was 7.35% and 8.63% in the intervention and control communities respectively. For current users, the prevalence was 4.36% and 5.41% for intervention and control communities respectively, as well. From intervention communities, 3.32% reported for current use of chewing tobacco and 2.54% reported for smoking, while these figures were 4.32% and 2.87% for control communities. Among the users who used tobacco in past six months 0.63% from the intervention communities and 0.80% from control communities used other form of tobacco products, like, past gul etc. Comparing the intervention and control communities for intentions to use tobacco by ever users also showed no significant difference for any type of

tobacco (p=0.21). Susceptibility of ever users was also not significantly different between the two communities as 3.80% youth in intervention communities and 3.66% youth in control communities were susceptible to use tobacco (p=0.96).

Discussion

Project ACTIVITY's intervention strategies are derived from prior research, including studies of youth in India (Perry ,1999, Tobacco Control Act of India, McDonald et al.,2009, Milton et al.,2004,USDHHS,2010). Funded by the Fogarty International Center at the National Institutes of Health, it aims to test the efficacy of a comprehensive, community-based tobacco control intervention for disadvantaged youth (10-19 years) living in low income communities of Delhi, a large metropolitan city in northern India. Its randomized evaluation design is strong. Analyses suggest the intervention and control communities are equivalent at baseline, before implementation of the intervention begins. Further study will demonstrate if the intervention approach is successful in these communities.

Prevalence of current tobacco use in any form in the slum dwelling youth as revealed in this study (4.88%) is similar to our earlier demonstration study of project ACTIVITY (4.58%) (Arora et al., 2010). GYTS, 2001 conducted in Delhi also shows similar prevalence of 4.5% for current use of any tobacco product among 13-15 year old school going youth. The GYTS, 2006 report provides the aggregated prevalence of 14 % for current tobacco use with all six regions of India combined, which might have inflated the mean of the prevalence compared to regional or state specific estimates, e.g. the 2001 Delhi study. This difference could be due to the inclusion of North –Eastern states of India in GYTS 2006 where tobacco use prevalence is higher as compared to other regions of India (GYTS, 2006).

Project MYTRI, conducted in 2004 with school going youth in the age group of 10-14 years also highlighted a much higher prevalence of 17.05% for ever use among government school students (Mathur et al., 2008). The youth in the current study are mostly government school students but report a lower prevalence for tobacco use. This could be due to the difference in study settings, as previous adolescent tobacco use studies have often reported higher prevalence estimates when subjects provided data in school-based surveys as compared to household-based surveys (Kann et al., 2002).

Project ACTIVITY's strengths include its strong research design in which selected communities were randomly assigned to intervention and control conditions. The large sample of participants and use of reliable and valid measures of tobacco use, intentions, and susceptibility add to our confidence in the results. This study also has some weaknesses that should be noted here. The communities were not randomly selected at the initial stage of identification; thus results would not generalize to all slums communities in India. Another major limitation of the survey was it relied on a self reported method of data collection. Intentional deception, poor

memory, or misunderstanding of the question can all contribute to an underestimation or overestimation of the true prevalence of tobacco use (Magliocca et al., 2005). Disparities in health due to tobacco have only widened over time in developed nations, and it is reasonable to believe that this same trend will be observed in India with time if nothing is done to curb use. Creative, community-based outreach activities are being used in project ACTIVITY to raise the awareness on changing social norms and new laws around tobacco use. The enforcement of tobacco control legislation in India e.g. ban on sale of tobacco products to those younger than 18; and prohibition of sale of tobacco products within 100 yards of educational institutions (Tobacco Control Act of India, 2003) will be integral to the success of curbing tobacco use and has been included as an important strategy in Project ACTIVITY. In the second year of intervention, these strategies will be combined with community-based cessation clinics in the community to provide non-pharmacological behavioral counseling to adults and youth. This paper ensures that Project ACTIVITY has broadly similar populations in the two arms and subsequent evaluations will provide a robust test of this intervention's efficacy. It will test a potential solution to addressing this crisis in these settings and future research on effectiveness of community based ACTIVITY intervention will generate much needed evidence on what works for tobacco control among youth living in low-income settings in India.

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