attributed to tobacco. Among male smokers 35–69 years of age there was a 51% excess of neoplastic deaths, a 31% excess of respiratory deaths, and a 15% excess of vascular deaths. Of all deaths attributed to tobacco, 45% were due to chronic obstructive pulmonary disease and 15% to lung cancer. Oesophageal cancer, stomach cancer, liver cancer, tuberculosis, stroke and ischaemic heart disease each caused 5%–8% of deaths. Tobacco caused about 0.6 million deaths in China in 1990 (0.5 million men).

The authors have shown that of all the causes of death, tuberculosis was the cause most related to smoking. This makes one wonder whether smoking is a risk factor for the occurrence of tuberculosis infection and disease. A meta-analysis to quantify the relationship between active smoking and tuberculosis infection, pulmonary disease and mortality included 24 studies. For tuberculosis infection, the summary relative risk (RR) estimate was 1.73 (95% CI 1.46–2.04); for tuberculosis disease, estimates ranged from 2.33 (95% CI 1.97–2.75) to 2.66 (95% CI 2.15–3.28). This suggests an RR of 1.4–1.6 for development of disease in an infected population. The RRs for mortality due to tuberculosis were mostly below the RRs for tuberculosis disease, suggesting no additional mortality risk from smoking in those with active tuberculosis. The researchers have not provided data on smokeless and other forms of tobacco products, which are the main forms of tobacco consumption in rural India. The inclusion of this information may have provided further insight into this problem. Some deceased subjects could have been classified wrongly as non-smokers as there was no way to prove the respondents' version of the story. If this is taken into account the RR of dying from tobacco would only have increased.

REFERENCES


spread all over the country by conducting a survey. The survey forms were distributed through the company's intranet and through on-site recruitment. Eligibility was based on being at least 18 years old, a daily smoker of ≥5 cigarettes, non-user of other tobacco products and intending to work at the same place for at least the next 18 months. Each participant provided written informed consent before randomization. Randomization was done in permuted blocks of 4 and was stratified on worksite, income and level of smoking.

The number of smokers assessed for eligibility was 1903. Of these, 771 were excluded due to ineligibility, leaving 1132 eligible. An additional 254 (22.4% of eligible) were excluded for not giving consent. A total of 878 underwent randomization to participate, i.e. 46% participation of identified smokers, or 77.6% of those eligible. An electronic tracking system was used to track the progress of the participants.

At enrolment, all 878 participants were informed about smoking cessation resources in their communities and of benefits offered by their employer for smoking cessation treatment.

Participants randomized to the incentive group (n=436) were informed on enrolment of the financial incentives being offered: for completion of community-based smoking cessation programme (US$ 100), for biologically confirmed abstinence by urine cotinine (US$ 250) within 6 months of enrolment and a larger incentive for an additional 6 months of abstinence (US$ 400), also biologically confirmed. (Financial compensation for each interview and for each cotinine test was given to all participants.) After 3 months of enrolment in this study, each participant was contacted to find out if (s)he had been abstinent for at least 7 days before the contact. If not, 3 more months were allowed before another telephone call. Those participants who during either telephone call reported at least 7 days abstinence were subsequently interviewed in depth. The results showed:

1. The rate of participation in a smoking cessation programme was higher in the incentive group than in the control group (15.4% v. 5.4%, p<0.001).
2. The 9-month or 12-month rate of cessation, as confirmed by cotinine testing, was 14.7% in the incentive group compared with 5.0% in the control group (p<0.001).
3. The cessation rate at 15 or 18 months of enrolment was 9.4% in the incentive group compared with 3.6% in the control group (p=0.001).
4. Similar numbers of participants in both groups were lost to follow up or withdrew in the first 6 months and through month 12 (no significant difference).
5. Those in the incentive group were three times more likely to be abstinent at the end of 9 months to 1 year than those in the control group, both after adjusting for stratification variables as well as for all variables in the study.
6. Heavier smokers (constituting 5%–6% of participants) were less likely to succeed in remaining abstinent for 9 months.
7. Those who had attempted to quit before, or were in the pre-contemplation stage were more likely to succeed than others.
8. Those who had self-reported excellent health were somewhat more likely to succeed than others, but this did not reach significance.

The main conclusion was that financial incentives for smoking cessation significantly increased the rates of smoking cessation in this working population.

COMMENT

This study shows that financial incentives can help motivate some people to quit smoking and remain abstinent for 9 months to a year. This is probably because a monetary payment is a more tangible incentive than long term health benefits of quitting smoking in the minds of currently healthy people. Hence, employers could consider implementing a similar scheme of financial incentives to help their workers quit smoking. The underlying idea is that such a scheme would not only benefit the workers but also save employers' money on healthcare payments, which tend to be larger among smokers. Nevertheless, it may be worthwhile studying whether workers abstinent up to the last payment remain so for a long time or whether relapse occurs soon after the final payment.

The authors of this study refer to 9–12 months of abstinence as 'long term', while a week to 1 month is considered as 'short term' abstinence, descriptions akin to those used by Lando et al. and Gritz et al. Yet there are other researchers investigating much longer term abstinence. One group found that for between 2 and 6 years of abstinence the rate of relapse fluctuated between 2% and 4% per year. Only after 10 years did it fall to <1%. Employers may like to consider the implications of this before designing a cessation programme and understand that they should not expect anywhere near 100% continued abstinence in successful quitters beyond 1 year. The possibility exists that continued financial incentives would help maintain abstinence beyond one year, but it is likely that eventually the effect would wear off, since it is not an internal motivator. Non-smokers and continuing smokers could also begin to feel discriminated against in terms of pay levels, like the brother of the prodigal son.

Before plunging into any scheme for smoking cessation, employers in India are advised to first learn as much as they can from the literature on the dynamics of quitting smoking and maintaining abstinence.

First, each country has its own current pattern of proportion of smokers in different stages. India may not be ready for financial incentives to promote smoking cessation.

Second, in any programme, given the nature of nicotine addiction, only a fraction of smokers will participate and only a small fraction of those participants will carry through their intention of quitting, as found in this study. The study shows, as others have also found, that less dependent smokers are more successful at quitting than heavier smokers.

How would the methodology be relevant to India: here, as yet, there are few community resources for smoking cessation. There are 18 tobacco cessation centres, mostly located in tertiary care hospitals in major cities, under the National Tobacco Control Cell of India. Only a few employers will find that these are located conveniently for their workers to be motivated to attend or be able to attend without missing hours of work. Awareness on the benefits of quitting smoking is low in India. Employers may wish to create in-house interventions or join hands with other employers to create such resources in their area.

The results of this study along with a consideration of other research studies could be helpful in planning effective cessation programmes in or near workplaces. Tobacco use cessation interventions would also need to include smokeless forms of tobacco, which are common in India.

Familiarity with the basic elements of theories of behavioural change in addiction would be important for employers and their medical teams. The transtheoretical model is a widely accepted theory that says that in a given population of smokers, there will be a distribution of people in different stages of readiness to quit and hence not all will be similarly responsive to the same type of intervention.

The distribution of current smokers across stages differs by country and by geographical area within countries. India, with some of the world's lowest tobacco use quit rates (<0.1% in Uttar Pradesh and 4% in men and 2.2% in women in Karnataka), is likely to have most of its smokers in the pre-contemplation phase,
i.e. not thinking about quitting. Hence, offering financial incentives to them to quit might at best make some of them start thinking about quitting, but not actually quit. Only a small fraction of them are likely to actually participate in such a scheme. It is noteworthy that the intervention summarized above was successful in moving a portion of the people thinking about quitting (contemplators) into taking action and successfully quitting.

A more effective approach would be to target initial interventions at smokers in the largest group, which in India is likely to be those who have not yet given much thought to quitting (pre-contemplators). Hence, it would make sense to begin with or emphasize on building awareness of the dangers of smoking and the benefits of quitting.\textsuperscript{11–13} Then, after this information has sunk in and many people begin to contemplate quitting, it would be the right time to address barriers and resistance to quitting. When plenty of people reach this stage, it might make sense to introduce a scheme with financial incentives, if the employer so wishes.

More importantly, employers need to consider other factors that bear on readiness to quit, which they can influence such as a scheme with financial incentives, if the employer so wishes.

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