Oral tobacco cessation with UK resident Bangladeshi women: a community pilot investigation

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Abstract

Our objective was to establish the short-term outcomes for successful tobacco cessation of a programme offering UK resident Bangladeshi women chewing paan with tobacco nicotine replacement therapy (NRT) in addition to brief advice and encouragement alone. We used a short-term longitudinal, quasi-experimental study design, in the setting of two local authority housing estates in Tower Hamlets, London. Bangladeshi women volunteers were recruited following presentations to community groups. The volunteers were assigned, after matching for age, number of paan with tobacco chewed daily and medical screening, to receive one of two tobacco cessation interventions (NRT with brief encouragement and advice, and brief advice and encouragement alone). The main outcome measures were changes in tobacco use and nicotine dependence, assessed by questionnaire and intake measures, adverse effects, and withdrawal symptoms. In total, 130 volunteers were recruited. Their mean age was 42.5 years (SD = 11.3). Mean number of paan quid with tobacco chewed daily was 10.7 (SD = 9.3) and the average age of starting to add tobacco to paan was 24 years (SD = 12). Ninety-one percent completed the 4-week trial. We found that 19.5% had stopped tobacco use, of whom 22% had received NRT, and 17% brief advice and encouragement alone. The successful members of the NRT group made a significantly greater reduction in their salivary cotinine scores at final review compared to baseline. Oral pain was reported as a barrier to successful oral tobacco cessation by 62% of the volunteers at final review. We conclude that methods identified as helping tobacco smokers successfully stop smoking can be used with Bangladeshi women chewing paan with tobacco. More research is needed to investigate these short-term outcomes and to explore the particular barriers to successful cessation for this group such as oral pain.

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Introduction

Tobacco use is a well-established cause of oral squamous cell carcinoma (Winn, 1997; Allard *et al.*, 1999). South Asian populations chew paan, made up of a betel leaf, lime and areca nut, to which tobacco is added. The biochemically validated prevalence of tobacco chewing in paan in a random sample of UK resident Bangladeshi women is 49%. Sixty-seven percent of this sample expressed a strong wish to give up tobacco use (Croucher *et al.*, 2002). The relationship between chewing tobacco in paan and pre-cancerous oral conditions has been confirmed in this community (Pearson *et al.*, 2001a). Williams *et al.* have reported qualitative research that indicates that chewing paan is an important part of women's

lives, concluding that the sociocultural and religious issues around its use must be understood if health promotion initiatives are planned (Williams *et al.*, 2002).

Nicotine replacement therapy (NRT) is a recommended component of strategies to help smokers give up, without which the odds of cessation relapse are increased (Department of Health, 1998). It achieves a higher rate of success than offering brief encouragement and advice alone, offering cost-effective support to prevent cessation relapse (Cromwell *et al.*, 1997). NRT patches offer a higher odds ratio of abstinence and reduction in withdrawal symptoms such as irritability and craving (Raw *et al.*, 1998; West *et al.*, 2000). There is, however, recognition of the need that for smokeless tobacco users and members of ethnic minorities there may be a need to modify the use of NRT to ensure its cultural appropriateness (Henningfield, 1995). The literature with respect to the use of NRT with tobacco chewers is limited. Sinusas and Coroso reported the outcomes of a trial with 14 participants (Sinusas and Coroso, 1993). More extensive trials have been conducted (Hatsukami *et al.*, 1996, 2000) with North American men chewing spit tobacco. They concluded that whilst the use of nicotine gum served merely to trigger further spit tobacco chewing, the nicotine patch should be considered as a vehicle to reduce the craving and withdrawal symptoms associated with tobacco cessation.

One study describes the use of NRT with an ethnic minority population (Ahluwalia *et al.*, 1998). The authors report that the use of the nicotine patch significantly improved successful short-term cessation in inner-city African-American volunteers interested in giving up smoking. There is no literature reporting the use of NRT with South Asian paan with tobacco chewers, a practice dissimilar from chewing spit tobacco both in the method of consumption and the sex of chewer.

Many smoking cessation programmes have adopted intensive support activity to complement the use of NRT. Whilst effective, it has been proposed that, if a greater proportion of tobacco users are to be helped at minimum cost, minimal intervention strategies might be adopted that would allow greater access for disadvantaged populations (Glynn *et al.*, 1990). The use of community networks has been identified as one method of improving recruitment and success in health promotion activity (Treasure, 1999).

This investigation aimed to establish the short-term outcomes for successful tobacco cessation of a programme offering UK resident Bangladeshi women chewing paan with tobacco, recruited through community groups, NRT in addition to brief advice and encouragement alone.

Methods

Sample size

The following assumptions were made with respect to sample size: a pre-pilot study indicated that a successful cessation rate using NRT patches would be 30%, whilst for those receiving brief advice and encouragement alone a cessation rate of 9% was indicated. A minimum sample size, using the 95% confidence interval and a standard error of less than 0.03, was estimated at 128. In total, 130 volunteers were recruited.

Recruitment

A series of presentations, by bi-lingual (Sylheti/ English) female researchers, to neighbourhood groups were made as part of an integrated local strategy, developed with this community in East London (Croucher and O'Farrell, 1998). This strategy includes health education campaigns with the community to raise risk awareness, and chewing tobacco suppliers (retailers and wholesalers) to address compliance with the existing legislative and regulatory framework with respect to the labelling and sale of tobacco products. One hundred and thirty Bangladeshi female volunteers, resident on two housing estates in the London Borough of Tower Hamlets, were recruited. Volunteers were included in the investigation if they were aged between 18 and 60 years, expressed a strong wish to give up tobacco use, and were willing to try using NRT. Data were collected between March and July 1999.

Table I. *Comparability of treatment groups at baseline (*n *= 130)*

	Group 1[a] (*n* = 65)			Group 2[b] (*n* = 65)		
	Mean	SD	Range	Mean	SD	Range
Age (years)	41.9	10.6	22–60	43.2	12	20–60
Age starting paan chewing (years)	23.1	12	7–59	25	12	4–59
No. of daily paan with tobacco	11.2	8.6	2–40	10.1	10	2–50
Habitual chewer (%)	71			76		
Leaf tobacco used (%)	64			75		
First paan quid with tobacco within 1 h of waking	54			44		

[a]Received NRT and brief advice and encouragement.
[b]Received brief advice and encouragement alone.

The intervention

The volunteers were systematically assigned to one of two groups. One group received a weekly supply of NRT patches along with brief advice and encouragement. The second group received brief advice and encouragement alone on one occasion at the start of the intervention. Pairs of participants were matched on age (within 12 months of either side) and number of paan with tobacco chewed daily. Participants assigned to the NRT group also completed a medical screening questionnaire to exclude those for whom NRT was contra-indicated. The main exclusion criteria were a history of severe cardiovascular disease, hypertension or diabetes, current use of psychotropic medication and pregnancy or breast feeding. Those excluded from using NRT on these grounds were assigned to the brief advice and encouragement group.

NRT patches (Nicorette 15 mg; Pharmacia-Upjohn) were supplied weekly for up to 4 weeks. Each volunteer receiving NRT was reviewed at this time, and adverse effects and withdrawal symptoms recorded. Further brief encouragement was offered to the volunteers receiving NRT at each review. The content of 'brief advice and encouragement' was based upon the recommended content of opportunistic interventions delivered routinely by health professionals (West *et al.*, 2000), typically asking volunteers about current use of tobacco, advising them to consider stopping tobacco use, offering assistance and arranging a follow-up. In this investigation those receiving brief advice and encouragement alone were advised of the risks of chewing tobacco, encouraged to give up and advised that their progress would be followed up 4 weeks later. This information was offered to volunteers by the bi-lingual research workers who had recruited the volunteers.

At the completion of this investigation those members of the brief advice and encouragement group, who were not medically excluded from receiving NRT, were offered supplies of NRT patches and ongoing weekly support.

Data collection measures

At recruitment volunteers participated in a previously piloted structured interview (Croucher *et al.*, 2002). The interview contains questions about aspects of tobacco use and degree of dependence upon tobacco. Self-reported tobacco use was validated by assessment of salivary cotinine levels using gas chromatography. Cotinine is the principal metabolite of nicotine. Volunteers provided saliva by keeping a cotton-wool dental roll in the mouth until saturated (Jarvis *et al.*, 1987). The use of saliva sampling was adopted following a community consultation, which indicated that this would facilitate better participation than the alternatives of providing blood or urine samples. Expired air carbon monoxide concentrations were also measured, using a Bedfont Smokerylser, to identify tobacco smokers.

The interview schedule was translated into

Bengali and independently re-translated into English to establish equivalence of meaning. The two Sylheti speaking female community workers conducted the recruitment interviews in the preferred language of the respondents. They were also responsible for the distribution of the NRT patches and follow-up activity during the investigation.

After 4 weeks a second sample of saliva for cotinine analysis was taken from all remaining volunteers, and data about withdrawal symptoms and adverse effects (Imperial Cancer Research Fund General Practice Research Group, 1993) collected from the NRT group alone.

Analysis of data

The data were analyzed using STATA. Sample means were analyzed with the paired t-test. Categorical data were analyzed using the Pearson χ^2 and Kruskal–Wallis tests. Changes at final review in salivary cotinine scores, adjusted for baseline, were analyzed using multiple logistic regression.

The 0.05 significance level was adopted. Where appropriate, 95% confidence intervals are reported.

Data relating to adverse effects and withdrawal symptoms was not available for eight and six volunteers, respectively.

Decisions about user categories and successful tobacco cessation were as adopted for our earlier prevalence study (Croucher *et al.*, 2002). Volunteers with a salivary cotinine score greater than 15 ng/ml were identified as continuing tobacco chewers or smokers at follow-up.

Ethics

The East London and the City Health Authority Local Research Ethics Committee approved the study. Informed written consent was obtained from participants.

Results

Entry to investigation

The 130 volunteers had a mean (SD) age of 42.5 (11.3) years. The mean (SD) number of paan quid with tobacco chewed daily was 10.7 (9.3) and the average (SD) age of starting tobacco chewing was 24 (12) years. Ninety-three percent were tobacco chewers alone; the remaining 7% both smoked and chewed tobacco.

Volunteers in both groups matched at baseline for age, daily number of paan quid with tobacco chewed and age of starting to add tobacco to the paan quid (Table I). After 4 weeks, at final review, 118 (91%) volunteers were still taking part. Of the 12 that were lost, two changed their mind about participation after recruitment, three reported being unwell and seven could not be contacted for their final review appointment.

Changes in salivary cotinine scores

The mean (SD) salivary cotinine score at baseline was 337.4 (224.8) for the whole group. Baseline mean (SD) salivary cotinine scores were 370.4 (252.7) for the NRT group, and 304.4 (234) for the brief advice and encouragement group. Final review mean (SD) salivary cotinine scores were 248.8 (SD = 233) for the whole group, 225 (SD = 206.2) for the NRT group and 272.6 (SD = 256.4) for the brief encouragement and advice group.

The difference in salivary cotinine scores between baseline and final review for the whole group was significant ($t = 5.3$, $P = 0.0$). There was no significant difference in salivary cotinine scores between the NRT and the brief advice and encouragement groups ($t = 1.1$, $P = 0.27$) at final review.

At the final review, after 4 weeks, 23 volunteers had completely stopped tobacco use, measured by their self-report and a salivary cotinine score below the threshold level. Thirteen (22%) volunteers had received the NRT, whilst 10 (17%) volunteers had received brief advice and encouragement alone.

Changes in salivary cotinine scores at final review, after adjusting for baseline, were greatest for those successfully using NRT compared to those complying with brief advice and encouragement and those who had reduced their cotinine scores from either group (Table II). These changes were statistically significant.

The successful volunteers

The successful volunteers from both groups were compared. There were trends for the successful

Table II. *Change in post-investigation salivary cotinine score at final review, adjusting for baseline (*n = *118)*

Post-test salivary cotinine	Co-efficient	95% CI
Constant	159.38	110.4, 208.4
Baseline salivary cotinine (whole group)	0.650	0.551, 0.748
Final review reduction (whole group)	–180.66[a]	–230.5, –130.8
Successful volunteers (brief advice and encouragement)	–198.37[a]	–286.7, –109.9
Successful volunteers (NRT)	–332.89[a]	–408.9, –256.8

[a]$P < 0.001$.

Table III. *Characteristics of successful volunteers at final review (*n = *23)*

	NRT (*n* = 13)		Brief advice and encouragement (*n* = 10)	
	Mean	SD	Mean	SD
Age (years)[a]	36.9	8.7	39.5	15.6
Age started tobacco chewing[a]	22.8	10	29	12.1
Daily paan quid with tobacco[a]	5.9	6.3	2.8	1.2
Baseline salivary cotinine[a]	281.7	275.2	64.7	64.7
Final review salivary cotinine[a]	5.4	5.3	3.1	4.2
First paan quid with tobacco within 2 h of waking (%)[a]	54		40	
Leaf tobacco user (%)[a]	54		40	

[a]$P > 0.05$.

volunteers from the NRT group to be younger (36.9 versus 39.5 years) than the successful members of the brief advice and encouragement group. They also started adding tobacco to the paan quid at an earlier age (22.8 versus 29 years), to chew more paan quid with tobacco daily (5.9 versus 2.8), were more likely to have the first paan quid with tobacco within 2 h of waking (54 versus 40%) and to use leaf tobacco in the paan quid (54 versus 40%) (Table III).

For most withdrawal symptoms, the majority of volunteers from the NRT group reported either 'none' or 'mild' ratings. The most common withdrawal symptom rated as 'severe' in this group was craving, reported by 22% of the unsuccessful and 10% of the successful volunteers. No differences in the rating of reported withdrawal symptoms were statistically significant.

Few successful or unsuccessful volunteers from the NRT group reported severe adverse effects. The successful were twice as likely to report severe skin reactions (20 versus 10%) and sleep disturbance (10 versus 5%) than the unsuccessful.

At final review all volunteers were invited to report any other barriers to successful cessation. Sixty two percent (73 of 118) of all participants reported oral pain.

Discussion

This pilot investigation is the first to report outcomes from a chewing tobacco cessation programme for a group of UK resident Bangladeshi women. It suggests, as in smoking cessation, that the use of NRT can help more volunteers succeed in giving up tobacco use (West *et al.*, 2000). The severity of individual withdrawal symptoms, especially craving, in the NRT group was generally rated as 'mild'. Similar findings have been reported with male North American spit tobacco chewers (Hatsukami *et al.* 2000). Existing community networks were used by two Sylheti speaking female community workers to recruit tobacco chewing volunteers. Whilst offered a level of individual help that was less intensive than that usually adopted in behavioural support to aid cessation

attempts, the volunteers received support that aimed to be sensitive to the particular tobacco consumption patterns and needs of the volunteers. Such an approach might be appropriate for South Asia where chewing tobacco in the paan quid has a high prevalence (Gupta, 2001).

The UK Bangladeshi community, of whom nearly a quarter live in Tower Hamlets, suffers multiple deprivations. It is distinguished by its strong family structures, low socioeconomic status, high rates of unemployment and low levels of formal female employment (Eade *et al.*, 1996). Tobacco use in women from this community is nearly twice the current smoking rates for women in the general population (Department of Health, 1998). Bangladeshi men are also more likely to smoke than men from the general population. The UK South Asian communities suffer disproportionately from health conditions for which tobacco use is a risk factor (Erens *et al.*, 2001). Medical exclusions may, therefore, intervene to prevent the use of NRT as was found in this investigation. The disadvantaged also have less success in giving up tobacco use because of greater nicotine dependency (Jarvis and Wardle, 1999). These issues place barriers between cessation attempts and success. It underlines the necessity of identifying innovations which address the needs of this group by continuing to offer them access to reliable and proven methods of tobacco cessation, such as NRT, in a culturally acceptable manner. Further investigation of the value of alternative methods of recruitment and support for women remaining at home is indicated, such as the use of domiciliary visits, if these sociocultural features that serve as barriers to successful cessation attempts are to be addressed.

At baseline the volunteers were similar to the participants in our prevalence study (Croucher *et al.*, 2002) with respect to mean salivary cotinine concentrations, number of paan with tobacco chewed daily and age of starting to add tobacco to the quid. It was noted that the salivary cotinine mean is comparable to that reported from other studies of chewing tobacco users (Benowitz *et al.*, 1988). The volunteers for this investigation were not, therefore, different from the wider population

of tobacco chewers with respect to their tobacco use. Unlike the participants in our prevalence study who were randomly selected from the Electoral Register, these volunteers were recruited through community groups. This may have allowed them access to potential levels of community support because of their public commitment to tobacco cessation

Results from a large randomized, double-blind, placebo-controlled trial of smokers (Yudkin *et al.*, 1996) showed that the NRT patch was more effective in smokers with a moderate nicotine dependence than either the mildly or highly dependent smoker. They argue that this is because the NRT patch provides a steady but relatively low level of nicotine which may not satisfy the needs of the more dependent tobacco user and be excessive for those with low dependency. There are indications that in this pilot investigation the use of the NRT patch helped, on average, the moderately dependent tobacco users achieve cessation, whilst brief encouragement and advice alone helped the less dependent. The group of successful volunteers using NRT in this investigation were much more likely to have made greater reductions at follow-up in their salivary cotinine scores than the group of successful volunteers who had received brief encouragement and advice alone.

Our previous study of the prevalence of tobacco chewing identified questionnaire items, which predicted above-average levels of dependency. These were positive responses to chewing tobacco in the paan quid within 1 h of waking and the use of leaf tobacco in the paan quid. The data from the investigation reported here show that the successful volunteers were significantly less likely to report using leaf tobacco in the quid and less likely to have their first paan quid with tobacco within 2 h of waking, which again suggests that the dependency levels of the successful volunteers were not above average. Yudkin *et al.* also reported that NRT patches were more effective in those aged 24–49 years (Yudkin *et al.*, 1996). Successful volunteers in this investigation were also younger than the whole group average.

The number of volunteers successfully stopping

tobacco use following brief advice and encouragement alone is unexpected. The inclusion in this group of volunteers with medical exclusions, who might feel more motivated to accept advice about the continuing health risks associated with tobacco use, may have led to a higher level of compliance which skewed the results. Butler *et al.* report a greater receptivity to advice when this is linked to an existing medical condition (Butler *et al.*, 1998). Common recruitment practice is that volunteers should be actively contemplating giving up tobacco use.

Limitations to the study can be acknowledged. The two fieldworkers in the investigation were aware of the differing status of the two groups of volunteers. In addition, no placebo patch was used. These may encourage a Hawthorne effect amongst volunteers. The assumptions with respect to sample size were found to be inaccurate because of inflated outcomes from the pre-pilot activity used to calculate this due to the use of a convenience sample. The short interval before final review may also be considered. However, this follow-up period, 4 weeks, is that required within the current reporting requirements of the Department of Health in England for NHS Smoking Cessation Services. These reporting requirements also require total abstinence, although there are indications in this investigation that there was relative change across the whole group of volunteers. The data show that all the volunteers who remained in the investigation at its conclusion had reduced salivary cotinine concentrations, suggesting that there was an overall reduction in tobacco use and dependency. If tobacco cessation is viewed as a dynamic process, partial success may offer future opportunities for further activity. The resource implications of providing weekly support for tobacco cessation with a large group of volunteers precluded the collection of withdrawal symptom and adverse effect data for the brief advice and encouragement group. Observations about any variation in the level of withdrawal symptoms and adverse effects between the two groups cannot, therefore, be made.

At the conclusion of the investigation it was surprising to receive reports from volunteers in both groups that oral pain had been a barrier to successful cessation. Oral pain, as a correlate of chewing tobacco cessation, is not widely reported in the literature. Tobacco chewing has been reported to cause gum recession and loss of attachment which can, in turn, lead to dentine sensitivity (Robertson *et al.*, 1990; Johnson and Slach, 2001). High levels of need for gum treatment have been reported for this community (Pearson *et al.*, 2001b). Nicotine has been reported to have an analgesic effect (Erenmemisoglu *et al.*, 1994). Chewing paan with tobacco may mask the pain symptomatic of dental diseases and their sequelae.

In conclusion, the results of this pilot investigation suggest that methods identified as helping tobacco smokers successfully stop smoking can be adapted for use with female Bangladeshi paan quid with tobacco chewers. The nicotine withdrawal symptoms following the use of NRT are generally mild. Further research, using similar methods, should be conducted to validate these short-term outcomes and to explore the particular barriers to successful cessation for this group such as oral pain.

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