

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
TV and radio ads						
Wilson 2005 [30]	Compares two different ad campaigns ('Every Cigarette is doing you damage' (EC) and 'It's About Whanau' (IAW) in generating Quitline calls by NZ Maori.	NZ-wide: Monthly quit line call data 2002-3.	n=2319 TV placements.	Database analysis. <i>Data Collection</i> Number of calls to NZ Quit line within one hour of 1482 TVCs. <i>Analysis</i> Calls per 100 TARPs calculated.	EC campaign generated 1.3 times number of calls per 100 TARPs compared to IAW campaign (RR 1.26, 95% CI 1.08-1.46). 8.2% of all Maori smokers rang the Quitline over the 2 years.	Ads were different in intent: EC a mostly generic threat appeal, IAW is a culturally targeted holistic /positive benefits appeal.
Grigg 2008 [33]	To assess the effects amongst NZ Maori smokers and <i>whanau</i> (extended family) of 'It's About Whanau' Campaign (IAW) ad campaign.	NZ-wide: Maori current smokers and recent quitters and their <i>whanau</i> .	Pre (n=473) and post (n=655) Weighted to reflect age/sex distribution of Maori smokers from 1996. NZ Census & NZ health survey.	Quantitative. <i>Data Collection</i> Quitline data pre and post launch. Cross-sectional computer aided telephone survey: pre-and post-campaign with Maori interviewers. <i>Analysis</i> SAS Version 13.0 to identify significant changes across survey years.	Campaign increased calls to Quit line following launch. Unprompted recall of smoking related ads increased significantly. Total recall 78% for smokers and 73% <i>whanau</i> . Ads rated highly believable. >50% said ads influenced them to quit.	Description of genesis of IAW campaign included. Source culturally specific.
Fernandez 2008 [39]	To examine Maori women's views on smoking cessation initiatives, including the IAW campaign.	Purposive sampling at a local Maori organization. Maori women, who were abstinent from smoking for six months or more.	n= 5 Maori women aged 28 to 45 yrs.	Qualitative. <i>Data Collection.</i> 2-hr Maori-centred focus groups with discussion, interaction and prompts. Feelings and beliefs about smoking and smoking cessation, including attitudes to culturally specific media campaign. <i>Analysis.</i>	IAW campaign preferred to graphic campaigns. IAW elicited an enthusiastic response to positive role modeling. Graphic anti-smoking ads evoke strong feelings of discomfort: perceived as having only short-term effects and raise cultural concerns re showing of	Positive feedback to IAW campaign compared with generic graphic TV ads.

				Boyatzis thematic analysis of transcribed and coded data.	graphic body parts, believed to be inappropriate or <i>tapu</i> , particularly for the elderly.	
Ivers 2005 [35]	To assess the effect of anti-tobacco TV ads from National Tobacco Campaign (NTC) in comparison to other interventions for Aboriginal people.	Aboriginal people in three remote communities in Northern Territory, Australia: smokers, ex smokers and never-smokers.	n=643 pre-test; n=628 post-test; n=351 both Age 12 yrs. +; 91% Aboriginal; 9% non-aboriginal; 50% male: 15% < 18 years, 46% 18-34 years, 39% > 35 years.	Mixed Methods. <i>Data Collection.</i> Community surveys baseline and 1 year. Outcome measures: recall of TV ads; smoking behaviour and self-reported quit rates. <i>Analysis</i> Chi squared tests of impact of exposure to interventions and changes in smoking behaviour. Logical regression: likelihood of smoking cessation. Thematic analysis qualitative data.	85% recalled ads: smoking status did not influence recall. Self-reported quit rate 4%. Recalling ads had no influence on cessation rate (Fisher's exact test $p=0.42$). Exposure to any of the tobacco interventions (advice, medication, posters, ads, Quit line, education) did not affect likelihood of cessation. Qualitative evidence of ads influencing quitting.	NTC included 2 ads that showed Aboriginal people. Content not described.
Boyle 2010 [31]	To examine responses of Aboriginal and Torres Strait Islander smokers and recent quitters to TV and radio ads from 'Bubblewrap' as part of 'making smoking history' campaign.	Convenience sample 3 sites Perth, Kalgoorie, and Broome, Western Australia.	n=198 Even age distribution in four groups, 18 to 29 years, 30 to 39 years, 40 to 49 years, and 50 years and over, 55% female, 45% male.	Quantitative. <i>Data Collection.</i> Cross-sectional personal intercept survey. Outcome Measures: recall; changes in smoking in response to ads; information sought after seeing ads; discussions generated by ads; relevance and believability. <i>Analysis</i> Chi squared tests analysed differences between study sites, sex and age groups and advertising mediums.	>83% recalled TV ads. 29.9% recall radio ad, 50% radio recall in non-Metro areas. Ads believable and relevant. 81.1% thought about cutting down/stopping. 59% talked to family about ads. 26.5% sought more information. 25.1% tried to quit in 2 months prior to study. 31.3% tried to cut down. 1.5% had successfully quit (self-reported).	'Bubblewrap' a generic advert. Included an Indigenous targeted radio ad narrated by 'Mary G' Unknown how smokers who stated they 'tried' succeeded in quitting.

Johnston 2010 [40]	To explore perceptions of promote Indigenous community members and health staff regarding acceptability and effectiveness of different tobacco control and health promotion interventions.	Northern Territory, Australia. Purposive and snowball, recruited, assisted by female elders.	Community members n= 25; Health & welfare staff n= 19 Age range 23-67, 12 male, 13 female: 2 never smoked, 15 current tobacco use, 6 ex-smokers, 2 recent quitters. Of 19 health staff, 5 Aboriginal including 2 AHWs; 14 non-Aboriginal.	Qualitative. <i>Data Collection.</i> Semi structured interviews. Attitudes and beliefs on a range of issues: relevant to this review are community-based interventions and social marketing campaigns. <i>Analysis.</i> Data coded descriptively and thematically analysed with Indigenous research assistants.	Community results: Good recall of TV anti-smoking messages. Best recall for graphic imagery, and graphic messages on tobacco packets. Children used pack warnings as leverage to persuade family to quit. In contrast, health staff thought social marketing campaigns needed to be significantly modified to be acceptable.	Attitudes of health staff may be converse to other evidence. Authors point out recall does not necessarily translate into cessation.
Stewart 2011 [46]	To determine whether mainstream anti-tobacco media advertisements influence Indigenous smokers to quit, and assess the potential effectiveness of different types of messages.	Adelaide and S Australian rural centres. Convenience sample smokers. Recruitment non-indigenous by consumer database and Indigenous by key community contacts.	n=299. 38 groups: 20 groups Indigenous; 18 groups non-Indigenous. n=143 Indigenous; n=156 non-Indigenous. Metropolitan sample: 80 Indigenous; 88 Non-Indigenous. M=145, F= 154. Aged 18-40.	Mixed Methods. <i>Data Collection.</i> Questionnaire post viewing 10 ads (one with Indigenous content). Outcome measures: message acceptance, personalized effectiveness, information, comfort, perceived effect, likely to discuss ad. Discussions recorded and transcribed. <i>Analysis.</i> Multivariate logistical regression analyses for six rating outcomes, Indigenous vs. non-Indigenous, and combined sample. Controlled for ad	'Bronchoscopy' rated highest by >80% Indigenous smokers for 5/6 outcome measures. Significant differences between Indigenous and non-Indigenous ratings: Indigenous rate reflective and positive ads higher. 'Bronchoscopy' and 'Bubblewrap' rated similarly overall: 'Bubblewrap' and 'Alive' ads perceived as neutral regarding gender and ethnicity. Indigenous ad "Billy" made significantly more Indigenous than	Although ads rated similarly on some scales, it is unknown whether motivation translates into behavioural change. How the source of an ad (Indigenous vs. non-Indigenous) rather than type of content/format impacts on response is not elucidated.

				order. Thematic analysis of discussions.	non-Indigenous smokers want to quit ($\chi^2 = 6.10, p = 0.014$) but gave mixed qualitative responses.	
Vogeltanz-Holm 2009 [32]	To examine rural youths response to 10 TV and radio tobacco counter marketing ads during a 13-week campaign.	Rural US northern plains state. Random digital phone telephone survey, one-month post-campaign of youth aged 12-17. Over sampling AI.	n=391 including 58 AI. 198 male, 209 female. Equal distribution ages, gender. A higher incidence of ever smoking in AI (39.7%) compared with White (23%).	Quantitative. <i>Data Collection.</i> Telephone survey with structured interview. Outcome measures: recall and confirmed recall; perceived effectiveness and emotional ratings. <i>Analysis.</i> GEE models examine effects of ads, gender, race/ethnicity on respondents confirmed recall (CR) and perceived effectiveness (PE) ratings.	54.7% CR at least 1 out of 5 TV ads; 45.8% CR at least 1 of 5/5 radio ads. Highest CR & PE of <i>Artery</i> ad - no ethnic differences with either; youth with higher intentions to smoke report significantly lower PE ratings. Radio ads more effective for girls. CR and PE do not necessarily translate into behaviour change; those with increased intentions to smoke find ads less effective.	
Print Media						
Daley 2006 [45] & Choi 2006 [44]	Both papers describe the assessment of cultural suitability of the Second Wind smoking cessation curriculum and format for a pan-tribal population.	Kansas USA. Convenience sample Indian health service clients >18yrs interested in quitting, willing to talk with non-Native investigators.	n= 41 in six focus groups 23 different tribal affiliations, similar demographics to IHS clinic.	Qualitative. <i>Data Collection.</i> 90 minute semi-structured focus groups. Attitudes to the curriculum of Second Wind program and ways to modify it. <i>Analysis</i> Transcriptions coded by 3 independent researchers and thematic analysis. Domain analysis addressing semantic relationship of what makes smoking cessation program Native.	Recommendations include: Native design with colour images, oral history and visual understanding; improved family-based content; traditional tobacco use to be included even if not relevant to some tribes; support from Native counsellors preferred with use of talking circles; preserve theme of individual tribes but include Native worldview.	Second Wind program has tokenistic Native images. These can be improved in important aspects to do with family, nature spirituality and respect for Elders. Choi's paper also described how the resources were presented to the focus groups.
Daley 2009	1) To determine if course materials,	Kansas US. Stage 1: Purposive	Stage 1: n=3 experts,	Mixed Methods. <i>Data Collection.</i>	1. Minor modifications re scientific content of	Protocol to ensure suitability on all

[43]	<p>where appropriate for AI/AN population on three domains: scientific accuracy; readability; cultural appropriateness, prior to implementation and further distribution.</p> <p>2) To develop a process to formally test health education materials for other targeted programs.</p>	<p>sample of experts</p> <p>Stage 2: Independent scorers of readability</p> <p>Stage 3: Cultural review panel</p>	<p>Stage 2: n=2 independent scorers,</p> <p>Stage 3: n=13 community members.</p>	<p>Stage 1: Scientific Panel - content analysis. Stage 2: Independent scoring of suitability assessment of materials (SAM), simplified measurement of gobbledygook (SMOG) and Fry readability formula.</p> <p>Stage 3: Focus group discussions on culturally appropriate materials and improvements.</p> <p><i>Analysis.</i></p> <p>Stages 1 & 3: descriptive.</p> <p>Stage 2: Chi square test checked congruence between scorers.</p>	<p>resources</p> <p>2. SAM 80%; Fry averaging reading level 7.1; SMOG readability 8.4</p> <p>3. No culturally insensitive material.</p> <p>Suggestions for improvement: graphics/photos to include more Native nations; add book of traditional tobacco use; additional Native words; video/audio of elders on traditional tobacco significance.</p>	<p>three levels: scientific accuracy; readability levels; cultural appropriateness.</p>
Doorenbos 2011 [28]	<p>Design and implementation of a randomised, controlled calendar mail-out to increase cancer-screening services in an urban population of American Indians and Alaska Natives.</p>	<p>US Pacific Northwest. All patients >18yrs on the database of the Seattle Indian Health Board (SIHB), who accessed treatment over prior 2 yrs.</p>	<p>n= 5605 AI/AN: (n=2805 Native calendar with cancer-screening messages; n=2800 control calendar with no messages). 55/56% Female; 44/45% Male. 29/30% current smokers.</p>	<p>RCT. Intervention: calendar + messages; control: no messages.</p> <p><i>Data Collection.</i></p> <p>Abstract of patient charts for demographic information and pertinent clinical screening procedures. Lung screening outcomes: prescription, advice or referrals for smoking cessation.</p> <p><i>Analysis.</i></p> <p>Chi squared tests evaluated significance in differences in screening outcomes between groups comparing age groups, sex, race (AI/AN vs. other) depending on which</p>	<p>Relevant to this review were lung cancer screening outcomes, based on smoking cessation interventions or advice offered to patients on review of patient charts three months after the calendar was current. There was a non-significant difference for any smoking outcome (prescription, advice, referral) between active and control. (6.3% and 7% patients respectively on intention-to-treat basis. $p=0.33$).</p>	<p>The Native art calendar was collaboratively designed with SIHB staff to include Native artwork and relevant health messages. The results suggested that printed materials with health messages are too weak an intervention to produce desired smoking cessation (and other) health screening outcomes.</p>

calendar received.						
Wilson 2010 [34]	Examination of how recognition of a national landline number changed after new pack health warnings (PHW) introduced in New Zealand.	New Zealand, recruitment via NZ health survey. Respondent ethnicity prioritized.	n= 1376 in first wave, n= 923 in second wave. Maori n=369, PI n=49, European n= 465, Asian n=40.	Quantitative. <i>Data Collection.</i> Prospective cohort design before and after in two waves; computer assisted telephone survey. Recognition Quitline number on PHW on old and new cigarette packs. <i>Analysis.</i> Paired matched odds ratio weighted for boosted sample of three ethnic groups, bivariate analysis socio-economic status.	24.1% absolute increase recognition Quitline number in sample interviewed in wave 1 & 2 (OR 3.31, 95%CI = 2.63-4.21. $p < .001$). Reduction in inaccurate interpretations. Absolute increases in recognition similar for Maori as general population (25.1% and 24.1% respectively).	Concurrent TV ads going on before wave 2, similar to some of the PHW's may be a confounding factor.
Internet						
Swartz 2006 [26]	To test efficacy of automatic behavioural intervention to smoking cessation by video-based Internet website and personalised presentations.	Sample of the general US population, including ethnic subgroups. Recruitment of current daily smokers 18+, considering quitting, at worksites via posters and e-mails.	n=351 (171 treatment, 180 control) 52% female, 48% male. 83.5% white, 6.7% African-American, 4.3% Hispanic, 2% Native American Indian, 3.5% other. 7%, 18-25 years; 38% 26-39 years; 48% 40-	RCT with wait-list control. <i>Data Collection.</i> Internet surveys on enrolment, immediately after and 90 days post intervention. Outcome measures: quit rates (7-day point prevalence); patterns of program use. <i>Analysis.</i> Logistic regression of quit status across predictor variables. Differential treatment effects of	Intervention cessation rate treatment group 12.3%, control cessation rate 5% at 90 days ($p=0.015$, OR 2.66, 95% CI 1.18-5.99) intention-to-treat. No sign of interactions between race/ethnicity and other dependent variables, so, chi squared test used.	No significant difference in outcome between different ethnic races, including American Indian. AI represented only a small percentage of total groups. Extensive use of video clips with choice of video role models. 12 different content versions allocated depending

			55 years; 6% >55 years.	predictor variables. Chi squared when predictor variables not significant.		on ethnicity stated.
Taualii 2010 [41]	To collect data on AI/AN ideas about how to use and modify an existing smoking cessation website.	AI/AN urban youth aged 12 to 18, recruited via flyers and powwows. Phase 1, focus groups on current website. Phase 2: usability testing new website.	Phase 1 n=12; phase 2 n=13. Phase 1 equal gender distribution; five, aged 13 -14, two aged 15-16, 5 aged 17-18. Six past smokers. 13 different tribes Phase 2, 13 youth 12-18 yrs.	Qualitative. <i>Data Collection.</i> Phase 1: Focus group review to make current website more culturally appropriate. Phase 2: Usability testing via website: functionality, cultural relevance, content, ease of navigation, and suggestions for improvement. <i>Analysis.</i> Phase 1: Focus groups thematic analysis. Phase 2: Analysis of quality of participants' experience.	Phase 1: look and feel of website needed to be more Native, including Native graphics and music. Phase 2 responses: website <i>cool and creative</i> , seeing decisions visually displayed, having and comparing choices, site would help both smokers and non-smokers, makes you want to quit smoking.	Example of a collaborative action research design for the development of culturally appropriate messages. Illustrated with before and after images of website windows.
Mobile phone						
Bramley 2005 [27]	To determine whether a smoking cessation service using mobile phone text messaging is as effective for Maori as non-Maori.	New Zealand English-speaking youths 16+, current smokers, interested in quitting, able to text on mobile phone. Maori targeted by radio mailing lists, magazine ads, Maori providers and networks.	Maori n=355, non-Maori n=1350 Median age Maori, 25 years active group/24 years control; median age, non-Maori, 22 years active group/21 years control.	Single blind RCT. Intervention: mobile text messages; control: follow-up reminder. <i>Data Collection.</i> Questionnaire by text or call, baseline and follow-up. Self-reported quit rates at 6, 12 and 26 weeks. Random sample verified abstinent by salivary cotinine. <i>Analysis</i> Chi square analysis of	Intervention is as effective for Maori as non-Maori. 26.1% Maori quit in the treatment group versus 11.2% Maori control group at 6 wks (RR: 2.34, 95%CI: 1.44-3.79). No significant difference between RR for Maori and non-Maori (RR: 2.16, 95%CI: 1.72-2.71). Salivary cotinine showed no difference between	Study uses a Kaupapa Maori framework of reporting. Texts were adapted for Maori use with Maori language, Maori health concepts and information on Maori traditions. Discussion points out that this is a good outcome

				percentage quit by treatment group. Comparison of Maori to non-Maori. Analysis of covariance number of cigarettes smoked and Fagerstrom test. Reported intention to quit and last smoking status carried forward.	over-reporting between Maori and non-Maori - 18% congruent with non-smoking. Relative risk not substantially altered in sensitivity analysis for missing data and salivary cotinine.	considering a higher prevalence in Maori youth compared to non-Maori youth.
Whittaker 2008 [42]	To develop a pilot youth-orientated multimedia smoking cessation intervention by mobile phone.	Multicultural College NZ. Phase 1 consultation: random selection 16-18yr smokers + non-smokers; phase 2 development: recruited via website; phase 3 pilot study: recruited via radio.	Phase 1, online survey n=180, focus groups n=27. Phase 2, n=41. Phase 3 n=17. Pilot study: 35% Maori, 24% Pacific Islander 18% European.	Mixed Methods: <i>Data Collection.</i> Phase 1: online survey plus 4 focus groups. Phase 2: online survey. Phase 3: Pilot study telephone survey. Outcomes: attitudes to content and format of website, cigarette consumption and self-reported quit rates at four weeks. <i>Analysis.</i> Descriptive statistics.	Phase 3: Nine out of 17 in the pilot study self-reported quit, 50% of the remainder cut down.	Quit rate was not stratified by ethnicity. Unknown how the self-reported quit status was identified. Extensive use of video clips via mobile phone with suitable and believable role models.
Whittaker 2011 [29]	To assess the effectiveness of an interactive multimedia mobile phone intervention for smoking cessation.	NZ wide: recruitment targeted at 16-25 yrs. particularly young Maori. Age >16yrs. daily smokers with video mobile phone who want to quit.	n= 226 (n=110 treatment; n=116 control). 55% NZ European, 24% Maori, 12% PI, 16% other in intervention group. 47% total female. Mean age 27 (SD 8.7).	Single blind RCT. Intervention: choice of role model videos and text; control: 2-wkly general health video message. <i>Data Collection.</i> 7-day point prevalence at 3 time points; continuous abstinence (Russell Standard) plus salivary cotinine at 6 months plus satisfaction survey.	No significant difference in continuous abstinence (intention-to-treat) at 6 months (between intervention (26.4%) and control (27.6%), ($p = 0.8$). Participants in intervention group reported positive attitudes to support and video role models.	Quit rate was not stratified by ethnicity. Attempt was made to validate quitters with salivary cotinine. Difficulties with recruitment so RCT underpowered.

				<i>Analysis.</i> SAS version 9.1.3: Chi squared 2-tail tests of intention to treat quit rates by treatment group.		
Other Media						
Johnston 1998 [37]	To describe current practices, knowledge, attitudes to smoking in school children. To develop educational intervention about tobacco use in school children.	Primary and secondary school children In Northern Territory, Australia: three remote communities.	n= 221, only 38 students completed both pre-and post-surveys and attended the intervention Age range was from less than eight to over 16 yrs.	Mixed methods. <i>Data Collection.</i> Pre-and post-intervention surveys modified from Anti-cancer Council Victoria surveys of secondary school students. Self-reported smoking behaviour pre-and post-intervention, attitudes and behavioural observation to CD-ROM. <i>Analysis.</i> Descriptive statistics.	Increased knowledge post-intervention but no change in smoking behaviour. CD-ROM popular: One community downloaded stories from CD-ROM and turned it into reading book. CD-ROM used as a reward by teachers. Younger children berated older ones & adults about smoking.	Intervention had multi-components. However, outcomes of the CD-ROM were reported. Due to school absences, there were problems following up some children post intervention.
Mitschke 2010 [36]	Describes development and implementation of tobacco prevention edutainment drama, Asian and Pacific Island youth. Evaluating impact of the drama on knowledge, attitudes, intended behaviour and change in future intention to smoke.	Hawaii, US Oahu Island. Fifth to eighth grade audiences at multi-ethnic participating schools.	n=2660 Mean age 12 years: 51.4% male; 48.6% female. 6.9% Pacific Island; 13.8% Native Hawaiian; plus wide variety of other ethnic groups.	Mixed Methods. <i>Data Collection.</i> Pre-and post-surveys. Questionnaire adapted from existing surveys. Attitudes and beliefs assessed according to theory of planned behavior; intention to smoke; relationship to characters and emotions. <i>Analysis.</i> Chi squared tests, pre-test vs. post on knowledge items. Marginal homogeneity test measures pre vs. post	Drama effective in increasing knowledge of tobacco. Significant difference on 3 items: increased understanding of concept and symptoms of addiction, defining second-hand smoke ($\chi^2 = 5.290, p=0.021$). Significant decrease in future intention to smoke. Viewers experience range of emotions indicating engagement (mean 3.39 emotions). 71% relate to non-smoking characters.	The travelling drama was made with input from the students through focus groups. Incorporates multimedia, video, PowerPoint slides, and anti-smoking TV ads.

				intentions to smoke in future.		
Patten 2010 [38]	Assess feasibility and acceptability of a targeted Tobacco Cessation intervention for Alaska Native pregnant women, which included use of a video and educational materials.	Yukon-Kuskokwim Delta W Alaska. Pregnant women >18yrs, <24weeks gestation, tobacco users, want to quit in next 30 days.	Phase 1: n=12 pregnant women in 2 focus groups. n=7 in-depth interviews 5 F + 2M; n= 3 pregnant women pre-test study procedure Phase 2: n=35: 17 pregnant Yupik females intervention; 18 pregnant Yupik females control. Mean age 25. 35/33% smoke, 47/44% use Iqmik; 18/22% chew tobacco.	Randomised 2-group design pilot. Intervention: video, cessation guide & phone counselling; control group: brief intervention & targeted brochures. <i>Data Collection.</i> Pre- and post- interviews, self-reported smoking status and salivary cotinine. Feasibility /acceptability measures: recruitment, compliance and satisfaction. <i>Analysis.</i> Group comparisons: exact test for categorical variables; two-sample rank sum test for continuous variables.	Majority found video and written materials helpful - no significant difference between active and control. Self-reported abstinence rates 6% both groups. Validated abstinence 6% control and 0% for intervention.	Video included stories of local role models to reinforce self-efficacy. Feasibility and acceptability considered poor by authors due inadequate recruitment and interest.

Table 1: Data extracted from included studies

Legend: TV – television; ad/s – advertisements; NZ – New Zealand; TARPS - Target Audience Rating Points; BAS – Before & After Study; IAW – It’s About Whanau; PHW – pack health warnings; N/A – not applicable; AN – Alaska Native; AI – American Indian; PI – Pacific Islander