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| Supplementary material – Data extraction table |
| **Author (Year)** | **Study strength** | **Intervention/methods /Setting** | **Objectives**  | **Outcome Variables**  | **Main findings/Comments** |
| An, L (2006)  | Two group pre- post study; N=753 | Minnesota QUITPLAN Helpline; Observational study; Minnesota, U.S | Test effect of offering Quitline plus free nicotine replacement therapy (NRT). | - Abstinence rates after 6-months.- Numbers of callers.- Cost per quit. | Call numbers increased from 155 to 679 per month pre-NRT to post-NRT. Post-NRT, the proportion of callers enrolling in multi-session counselling (23.4% v 90.1%) and using pharmacotherapy (46.8% v 86.8%) increased. 30-day abstinence at six months increased from 10.0% pre-NRT to 18.2% post-NRT. The cost per quit pre-NRT was 1362 dollars and rose post-NRT to 1934 dollars suggesting an increase in cost per quit. |
| An, L (2008)  | Observational study; N=607 | Minnesota QUITPLAN quitnet.com online smoking cessation service; Minnesota, U.S; 2004 | Test the link between website utilisation and quit rates; identify website improvement strategies. | - Utilisation of varying site features.- 30-day abstinence.- Associations between site components and quit rates. | Interactive quit planning tools were most popular (used by 77% of users); quit guides were second, used by 60% of users followed by passive (38%) and active (24%) community features. Online community engagement through one-to-one messaging was low (11%) as was use of online counselling (5%). The 30-day abstinence rate among study participants at 6 months was 9.7%. Use of interactive quit tools, and messaging with other members of the online community, was associated with increased abstinence. |
| An. L (2010)  | Observational cohort study; N=8,144 | Minnesota QUITPLAN programs; Minnesota, U.S | Assess most popular form of smoking cessation services utilised. | - Enrolment by current smokers.- 30-day abstinence.- Cost per quit. | Enrolment was greatest for the online service (n =4,698), then helpline (n = 2,351), treatment centres (n = 616), and work-sites (n = 479). The online service attracted younger smokers. The helpline reached lower socioeconomic smokers. 30-day abstinence rates were higher for the helpline (29.3%), treatment centres (25.8%), and work-sites (19.6%) compared with the online program (12.5%). The cost per quit was lowest for online at $291 per quit. |
| Balmford, J (2009)  | Cross-sectional study comparing two groups; N=28,247 | Victorian Government Quitline and Quitcoach; Victoria, Australia; 2003-2007 | To assess who is using online services and determine if they’re different from quitline users. | - Demographics.- Patterns of use. | More females and younger users utilised QuitCoach than both smokers in general and Quitline users. Online users were moderate smokers and were less likely to have just quit than Quitline callers. Half of QuitCoach users first use the service after setting a quit date. Usage was correlated with anti-smoking advertising and to day of week, being highest earlier in the week. |
| Blankers, M (2011)  | RCT; N=205 | 7 live chat sessions; 3- and 6- month follow-up; Netherlands | Examined the effectiveness of Internet-based therapy (live chat) and Internet-based self-help service for problematic alcohol users. | - Alcohol consumption.- Treatment response.- Quality of life. | Differences between live chat therapy and self-help service were not significant at 3 months follow-up (p = .11) but were significant at 6 months (p = .03), with larger effects obtained for Live chat therapy group. There was a similar pattern of results for treatment response and quality-of-life outcome measures. |
| Bock, B (2013)  | RCT; N=60  | Randomised to either non-smoking texts (control) or TEXT2QUIT intervention; Age range 18-52 years | Evaluate the feasibility and preliminary efficacy of a smoking cessation intervention program delivered through text messaging. | - 7-day point prevalence abstinence at 8 weeks, 3- and 6- months. | Overall significant group quit rate differences in 7-day point prevalence abstinence across all follow-up time points. Individuals given the TXT intervention had significantly higher odds of 7-day point prevalence abstinence compared to the control group (OR=4.52). Intervention feasibility was greatly improved by switching from traditional face-to-face recruitment methods (4.7% yield) to an online/remote strategy (41.7% yield) |
| Brandt, C (2013)  | Qualitative thematic analysis; N=1663 messages | Qualitative thematic analysis | To investigate themes discussed on a blog in an internet-based smoking cessation intervention and to examine if blogging could provide social support to aid smoking cessation. | - Identify common themes.- Blog viewer’s v posters. | The majority of messages contained personal stories or experiences (53%), provided emotional support (34%) or congratulated other users (17%). The messages were found capable of supplying social support to members on the blog. In addition, the researchers found that only a minority of users who viewed the blog participated actively in posting messages, and only a minority were highly active bloggers. |
| Brandt, C (2013)  | Qualitative study; N=9 | Dit Digitale Stopprogram; Denmark; 2010  | To investigate the importance of the relationship between user and online smoking cessation service. | - Qualitative in nature.  | Participants established a relationship with the program that influenced their smoking cessation process. The ability to project rationale for quitting, relapse triggers and receive help during a relapse event was crucial for the establishment of the relationship between the user and the program. |
| Bricker, J (2014)  | Double blinded RCT; N=196 | SmartQuit v QuitGuide; U.S | Compare smartphone-delivered acceptance and commitment theory (ACT) for smoking cessation app (SmartQuit) with the National Cancer Institute's app for smoking cessation (QuitGuide) | - Smoking cessation app features. | QuitGuide features: (1) “Thinking about quitting” focuses on reason-based motivations to quit by encouraging users to list reasons for quitting (2) “Preparing to Quit,” helps users develop a personalised quit plan, identify social support, and provides information on medications; (3) “Quitting” teaches skills for avoiding cravings to smoke, such as finding replacement behaviours; (4) “Staying Quit” presents skills for coping with slips via fighting cravings. Users can share QuitGuide's content via Facebook, Twitter, or email. |
| Centers for Disease Control (2015) | Tobacco control manual | Conducting Quitline Evaluations: A workbook for Tobacco Control Professionals |  |  | Recommended to include cost per enrolee and cost per quitter in evaluation. Opportunity to both qualitatively and quantitatively evaluate how Quitlines interact with other cessation program components. Investigate how they could interact more effectively and efficiently. |
| Centers for Disease Control (2005) | Leading Tobacco Control body manual  | Centers for Disease Control and Prevention- Telephone Quitline evaluation Manual | Chapter 7- Evaluating Quitlines |  | Most states reach 1%-5% of their tobacco-using population; lack of reach is generally due to funding that doesn’t allow service promotion; States with the sharpest reductions in tobacco consumption (California, Massachusetts, Arizona, and Oregon) have all invested heavily in Quitlines and aggressive media campaigns; about 70% of smokers visit their physicians at least once a year, but fewer than 5% have used a Quitline. |
| Cheung, Y (2015)  | single-blinded parallel; 3-arm pilot cluster RCT; N=136 | U.S | Determine if group discussion via the WhatsApp or Facebook social group were effective to prevent smoking relapse in recent quitters. | - 2- and 6- month relapse rates.- Participant and moderator posts. | Fewer participants in the WhatsApp group (17%) reported relapse than the control group (42.6%) at 2-month (OR 0.27) and 6-month (40.5% vs 61.1%; OR 0.43) follow-ups. The Facebook group (30.0%) had a lower relapse rate than the control group (42.6%) at 2-month (OR 0.58) and 6-month (52.5%vs 61.1%; OR 0.70) follow-ups. The WhatsApp social groups had more moderators' posts (median 60, IQR 25 vs median 32, IQR 7) and participants' posts (median 35, IQR 50 vs median 6, IQR 9; P=.07) than their Facebook counterparts. The WhatsApp social group was effective in reducing relapse probably because of enhanced discussion and social support. |
| Cosh, S (2013)  | Process and outcome evaluation; N=9,928 | South Australian Quitline; exploratory study of callers in 2010; looking at Aboriginal use of Quitline; S.A, Australia. | Explore patterns of Indigenous use of SA Quitline. | - 3-month quit rates.- Usage of Quitline by percentage of population group who smoke. | 3.6% of indigenous and 3.7% of non-indigenous South Australian smokers made contact with the Quitline. 3-month quitrates were 2.5% in indigenous and 14.4% for non-indigenous.  |
| Danaher, B (2015)  | RCT; N=1,683 | Chewless tobacco website and quitline; U.S | Whether offering Web and Quitline for smokeless tobacco users results in longer-term tobacco abstinence than either intervention alone. | - 7-day point prevalence abstinence at both 3- and 6-month follow-up.- Site and quitline visits, number of calls and duration of usage.- Program satisfaction survey. | Combining Web and Quitline interventions did not result in additive or synergistic effects, as has been found for smoked tobacco interventions. Both interventions were more effective than a self-help control condition in helping motivated smokeless tobacco users quit tobacco. Intervention usage and satisfaction were related to the amount of content offered. Usage of the Quitline intervention decreased when offered in combination, though rates of helpfulness and recommendations were higher when offered in combination. |
| Danielsson, A (2014)  | Systematic Review; 33 studies | Sweden; 21 studies on internet support and 12 on quitlines for smoking cessation. | Determine if evidence exists that internet or phone based support can help participants to quit smoking. | - Varied but most related to periodic abstinence rates. | Mixed results were identified regarding internet interventions and smoking, with some positive effects for the smoking cessation program that combined the use of both the internet, mobile phones (SMS) and e-mail. Large attrition rates were reported in several studies (≥60%). Simultaneous use of NRT was common. For quitlines; advantage detected for repeated proactive advice rather than single reactive advice, i.e. counsellors initiated continued contact.  |
| Duke, J (2014)  | Cross-sectional descriptive study; N=50 tobacco control programs | U.S; 2013 | Examine tobacco control programs (TCP) use of and activity levels on social media, the reach of TCP sites, and the level of engagement with the content on sites. | - Presence on social media sites.- Reach (likes, follows) | 60% of TCPs were using social media. Approximately 26% of all TCPs used 3 or more social media sites, 24% used 2, and 10% used 1 site. Overall, 60% had a Facebook page, 36% had a Twitter page, and 40% had a YouTube channel. The reach of social media was different across each site and varied widely by state. Among TCPs with a Facebook page, 73% had less than 100 likes per 100,000 adults in the state, and 13% had more than 400 likes per 100,000 adults. Among TCPs with a Twitter page, 61% had less than 10 followers per 100,000 adults, and just 1 state had more than 100 followers per 100,000 adults. Seven states (23%) updated their social media sites daily. The most frequent social media activities focused on the dissemination of information rather than interaction with site users. |
| Duke, J (2014) | Observational study; N=194,734 | Quitnow Web coach and 1-877-U-CAN-NOW Quitline; Florida, U.S; 2010-2013 | Investigate the effect of Florida's tobacco cessation media campaign and nationally funded media campaign on telephone Quitline and Web-based registrations for cessation services. | - Caller and user numbers.- Demographic changes.- Target rating points.- Use of service as a percent of state-wide smokers. | 141,221 users registered for the Florida Quitline, and 53,513 registered for the online Web Coach. Compared with tobacco user’s state-wide, both Florida Quitline and Web-based services were used by a larger proportion of females, highly educated, and aged 35 to 54. Numbers increased when free NRT offered. In 2011, 1.6% of Florida tobacco users registered for cessation services: 1.3% through Quitline and 0.3% through Web Coach. In 2012, 2.6% of Florida tobacco users registered for cessation services: 1.8% through Quitline and 0.8% through Web Coach. |
| Emmons, K (2013) | Two-arm RCT; 15 month follow-up; N=374  | U.S | Evaluate the effectiveness of a targeted and tailored intervention in Web-based versus print formats. | - Web engagement.- Quit attempts.- Abstinence.  | 58.3% (77/132) of Web participants logged on at least once (mean visits 3.25), similar rates of cessation in the two arms, and no differences in quit attempts or readiness to quit. Although there were high rates of satisfaction for both arms. |
| Etter, J (2005) | RCT; N=11,969 | 2003-2004. | To compare the efficacy of two Internet-based, computer-tailored smoking cessation programs. | - Quit rates by transtheoretical stage. | For smokers in the contemplation stage of change and in former smokers, basing an intervention on the stages of change outlined in the trans theoretical model didn’t result in higher abstinence rates than the control.  |
| Gainsbury, S (2011) | Systematic review; 9 studies | Australia; 9 studies included; 7 relating to tobacco | Examine internet-based therapy for treatment of addictions.  | - Daily cigarette consumption.- Point prevalence abstinence.- Program engagement. | Online smoking treatment components appear to be effective as website usage was significantly related to abstinence and quit-rates at post-treatment. Writing and sending emails early in treatment was a significant predictor of successful smoking abstinence at 12-month follow-up. Mixed results were found for the addition of telephone counselling calls, which were not related to smoking abstinence for one trial but significantly increased the likelihood of successful smoking quit rates in another trial. |
| Graham, A (2013)  | Three-arm RCT; N=2005 | IQUITT study; U.S; 2005 | Economic evaluation of the iQUITT Study, comparing Basic Internet, enhanced Internet and enhanced Internet plus telephone counselling at 3, 6, 12 and 18 months. | - Quit rates at each follow-up.- Incremental cost per quitter of the three programs. | Basic Internet had the lowest cost per quitter at all time points. In the analysis of incremental costs per additional quitter, enhanced Internet + Phone was the most cost-effective using both single and multiple point prevalence abstinence metrics. As adherence increased, the cost per quitter dropped across all arms. Costs per quitter were lowest among participants who used the ‘optimal’ level of each intervention, with an average cost per quitter at 3 months of US$7 for Basic Internet, US$164 for Enhanced Internet and US$346 for Enhanced Internet + Phone.  |
| Graham, A (2015)  | Three-arm RCT; N=2005 | IQUITT study; U.S; 2005 | Examined mediators and moderators of abstinence comparing an interactive smoking cessation Web site, online social network alone and with proactive telephone counselling to a static Internet control. | - 30-day point prevalence abstinence. | Significant mediators of 30-day PPA were changes in smoking temptations, quitting confidence, and positive and negative partner support, which were strongly associated with increased Web site utilisation. The addition of telephone counselling to an enhanced Web site further improved abstinence rates, partly via an association with increased quitting confidence. Online community users were more likely to quit at 3-months than non-users. |
| Graham, A (2016)  | Systematic Review; 40 RCT’s, N=98,530 | Systematic review and meta-analysis; U.S | Determine the effectiveness of Internet interventions in promoting smoking cessation amongst adult tobacco users. | - Short-term abstinence.- Relative effectiveness.  | Comparing Internet interventions to assessment-only/waitlist control were significant (RR 1.60, four studies). Static Internet interventions compared to print materials were not significant (RR 0.83; two studies), whereas comparisons of interactive Internet interventions to print materials were significant (RR 2.10; two studies). No significant effects were observed in comparing Internet interventions to face-to-face counselling (RR 1.35; four studies) or to telephone counselling (RR 0.95; two studies). |
| Haug, S (2013) | Two-arm cluster RCT; N=755 | Intervention: n=372; control: n=383; Switzerland | Test the efficacy of an individually tailored, fully automated text message based intervention for smoking cessation in young people. | - 7-day abstinence.- 4-week abstinence.- Number of cigarettes.- Stage of change.- Quit attempts. | The 7-day smoking abstinence rate at follow-up was 12.5% in the intervention group and 9.6% in the control group. No differences between groups were observed in 4-week point prevalence abstinence rates. The decrease in the mean number of cigarettes smoked per day from baseline to follow-up was higher in the intervention group than in the control group. Occasional smokers in the intervention group made more attempts to quit smoking than occasional smokers in the control group.  |
| Heffner, J (2015)  | Experimental arm of an RCT; N=76 | U.S | To examine: (i) the 10 most-used app features, and (ii) prospective associations between feature usage and quitting. | - Qualitative assessment of most used features.- 30-day point prevalence abstinence at 2 months. | The most-used features were the quit plan, tracking tools, progress, and sharing. 8 out of the top 10 most popular features were based on traditional CBT: developing a quit plan, tracking, viewing progress, sharing, and journaling. Only two of the 10 most used features were prospectively associated with quitting: viewing the quit plan and tracking practice of letting urges pass. Tracking acceptance and commitment therapy (ACT) skill practice was used by fewer participants but was associated with cessation. |
| Hutton, H (2011)  | Systematic review and meta-analysis; 21 RCT’s | U.S | Evaluate the efficacy of Web-based interventions in adults, college students, and adolescents. | - Quit rates.- Odds of quitting. | Twenty-one RCTs were included. Among adults, 2 RCTs found that a multicomponent intervention with Web and non-Web-based elements was more efficacious than a self-help manual, and one of 2 RCTs found that Web-based interventions may be more effective than no treatment. Three trials provided insufficient evidence to demonstrate whether Web-based interventions were more efficacious than counselling. By contrast, tailored Web sites in 2 RCTs and greater Web site exposure in 6 of 7 RCTs were associated with higher rates of abstinence. Among college students, evidence was insufficient. |
| Jacobs, M (2014) | Comparative analysis; N=9 Facebook apps | U.S; 2013 | Review the features and functionality of Facebook apps for smoking cessation and determine the extent to which they adhere to evidence-based guidelines for tobacco cessation treatment. | - Coding of content features (interactive, informational, and social) and adherence to a 20-item index derived from Clinical Practice Guidelines for Treating Tobacco Use. | Facebook apps fell into 3 categories: public pledge to quit (n=3), quit-date-based calculator/tracker (n=4), or a multicomponent quit smoking program (n=2). All apps incorporated interactive, informational, and social features except for two quit-date-based calculator/trackers apps (lacked informational component). All apps allowed app-related posting within Facebook (i.e., on self/other Facebook profile), and four had a within-app "community" feature to enable app users to communicate with each other. Adherence to cessation treatment and clinical guidelines was low. |
| Keefe, B (2015)  | Four month process evaluation of a national service. | Evaluation of service; smokefree.gov; U.S. 2014-2015; Conference presentation | Investigate live chat feature before and after integration with the U.S National Cancer Institutes (NCI) smokefree online service. | - Analytics data of visits and usage.  | Three months prior to the integration (Nov 2014-Jan 2015), 505 live cessation chats were conducted, with an average of 168 chats per month. In February 2015, there were 566 total chats. That number rose to 1,318 chats in March 2015 after the first full month of integration into the online service. Comparing totals of last month without integration to the first full month with integration, there was a 590% increase in chats. In total, Smokefree.gov referred 2,126 chats to ‘LiveHelp’ in March 2015 and was the #1 referrer to the service. |
| Lehto, T (2011) | Systematic Review; 23 studies | Finland; 2004-2009 | Analyse persuasive system features in Web-based interventions for substance use by applying the persuasive systems design (PSD) model. | - Analysis of common themes. | Reduction, self-monitoring, simulation, and personalisation seem to be the most used features to support accomplishing a user's primary task. There was a lack of tailoring to varying stages of the quit process, relapses and demographic differences in users and may imply that the interventions are targeted for too broad an audience. Leveraging reminders was the most common way to enhance the user-system dialogue. |
| Mckay, H (2008)  | RCT; N=2318 | (1) QSN intervention condition presented cognitive-behavioural strategies, (2) the Active Lives control condition provided participants with guidance in developing a physical activity program to assist with quitting; Oregon, U.S | Encourage tobacco abstinence via the use of strategies that address each participant’s behaviour, cognition, and environment. | - 7-day point prevalence abstinence at 3- and 6- months.  | No between group differences in smoking abstinence were found at 3- and 6-month follow-up assessments. While participants in the quit smoking network (QSN) intervention condition spent more time than controls visiting the online program, the median number of 1.0 visit in each condition and the substantial attrition indicate that participants were not as engaged as expected. |
| Myneni, S (2015)  | Mixed methods; N=1423 | Mixed-methods: qualitative coding, automated text analysis, and affiliation network analysis; 16,492 messages analysed; U.S | Identify content-specific patterns in online platforms, with the aim of generating targeted intervention strategies. | - Thematic content analysis. | The most common themes identified in QuitNet messages included relapse and cravings. QuitNet members who were exposed to other abstinent members by exchanging content related to interpersonal themes (e.g., social support, traditions, progress) tended to abstain.  |
| Myung, S (2009)  | Systematic review and meta-analysis; 22 trials | U.S and South Korea. | Evaluate the effects of online and web-based smoking cessation programs. | - Quit rates. | In meta-analysis of all 22 trials, the intervention group had a significant effect on smoking cessation (relative risk [RR], 1.44). Similar findings were observed in 9 trials using a Web-based intervention (RR, 1.40); and in 13 trials using a computer-based intervention (RR, 1.48). Subgroup analyses revealed similar findings for different levels of methodological rigor, stand-alone vs supplemental interventions, type of abstinence rates employed, and duration of follow-up period, but not for adolescent populations (RR, 1.08; 95% CI, 0.59-1.98). |
| Nash, C (2015)  | Cross-sectional descriptive study; N=141,429; 10 state quitlines | U.S; 2012-2013 | Describe the characteristics, web utilisation patterns, and return rates of tobacco users who self-selected into an online (online-only) versus integrated phone/Web cessation program. | - Site visits.- Return visits.- Demographics.- Component use.  | 79.91% of participants selected the combined telephone/online program. Online-only were more likely to log in compared to phone/online (76.85% vs 42.04%), but less likely to return after their initial log-in (40.15% vs 58.39%). Those who chose online-only were younger, healthier, more highly educated, non-ethnic minority, and less likely to be heavy smokers. Among both service populations, participants were more likely to return to web services if they were women, older, more highly educated, or were sent NRT through their quitline. Phone/online were also more likely to return if they had completed a coaching call. The interactive Tobacco Tracker, Cost Savings Calculator, and Quitting Plan were the most widely used features overall. Online-Only were more likely than phone/online to use most key features, most notably the 5 Quitting Plan behaviours. |
| Neri, A (2016)  | Comparative effectiveness study; N=4086 | Four states, U.S; 2011-2012.  | Compare effectiveness of four state tobacco quitlines and Web-based tobacco cessation interventions. | - 30-day point prevalence.- Demographics.- Odds ratios of quitting.  | Quitline users were significantly older, more heterogeneous in terms of race and ethnicity, less educated, less likely to be employed, and more often single than Web-based users. The 7-month 30-day PPA rate was 32% for quitline users and 27% for Web-based users. Significantly increased odds of quitting were associated with being partnered, not living with another smoker, low baseline cigarette use, and more interactions with the intervention. After adjustments for demographic and tobacco use characteristics, quitline users had 1.26 the odds of being abstinent in comparison with Web-based users. |
| Papandonatos, G (2016)  | U.S; 2005; N=399 | Randomised trial of one arm of a 3-arm RCT. | Estimate the causal effects of online community use on 30-day point prevalence abstinence at 3 months among smokers that received a combined Internet/phone intervention for smoking cessation. | - Participation in online smoking cessation forum.- 3-month point prevalence abstinence.  | Automated tracking metrics of passive (reading posts, viewing profiles) and active (writing posts and messages) community users were extracted at 3 months. Patterns of community use were None = 36.3%, Passive = 20.6%, and Both = 43.1%. Abstinence rates were None = 12.2%, Passive = 25.2%, and Both = 35.5%. More than 1/3 of the participants who used the community both passively and actively achieved abstinence. Participation in an online forum as part of a combined online/phone service could promote short-term abstinence. |
| Pechmann, C (2016)  | Two-arm RCT; N=160  | Tweet2Quit; U.S | Assess the net benefit of adding a Tweet2Quit support group to a usual care control condition of nicotine patches and a cessation website.  | - Abstinence at 7, 30 and 60 days. | Tweet2Quit participants averaged 58.8 tweets/participant and average tweeting duration was 47.4 days/participant. Tweet2Quit doubled sustained abstinence out to 60 days follow-up (40.0% v 20% in control). Tweeting via phone predicted tweet volume, and tweet volume predicted sustained abstinence. The daily autocommunications caused tweeting spikes accounting for 24% of tweets. Found to be low-cost and scalable.  |
| Ploderer, B (2014) | Qualitative thematic analysis; N=14 | ‘DistractMe’; Melbourne, Australia; Cancer Council Australia | To pilot a mobile app "DistractMe" to enable quitters to access and share distractions and tips to cope with cigarette cravings. | - Qualitative thematic analysis.  | Three techniques of coping were identified: diversion, avoidance, and displacement. Three forms of engagement with tips for coping: preparation, fortification, and confrontation. Overall, strategies to prevent cravings and their effects (avoidance, displacement, preparation, and fortification) were more common than immediate coping strategies (diversion and confrontation). Tips for coping were more commonly used than distractions to cope with cravings, because they helped to fortify the quit attempt and provided opportunities to connect with other users of the application. |
| Puckett, M (2015) | Cross-sectional analytic study; N=5,393 | 2,238 Quitline users, 1,848 online, and 1,307 dual-service users; Four U.S states; 2011-2012 | Assess differences in demographics, and likelihood of quitting between online, telephone and dual service users. | - Demographics.- 30-day point prevalence.  | In addition to telephone services, 96% of all U.S quitlines offer Web-based cessation services. Persons who used both telephone and Web-based services were more likely to report abstinence from smoking for 30 days at follow up (odds ratio = 1.3) compared with telephone-only users and with web-only users (odds ratio = 1.5). These findings suggest that states might consider offering both types of cessation services to increase cessation success. |
| Ramo, D (2015) | Cross-sectional survey and qualitative interviews; N=570 | U.S | Determine if young adults are interested in a Facebook intervention for smoking cessation and to inform intervention design. | - Perceptions of using Facebook for smoking cessation.- Demographics of those most interested. | 31% of the full sample reported they would want to get help to quit smoking through Facebook. Interest in using Facebook to quit was greater among those who were more motivated to quit, had made a quit attempt in the past year, and had previously used the Internet for assistance with a quit attempt. Social support/convenience were identified as strengths of Facebook, privacy remained a concern. |
| Rudie, M (2016) | National annual survey; 47 U.S states | North American Consortium for Quitlines 2015 annual survey | Complete survey of North American Quitline program components. | - Budgets, services offered, longitudinal trends.  | Budgets in the U.S have stagnated for the past 5 years, and fallen in 2016. The median U.S state Quitline budget is $1,716,560, ranging between states from $159,589 to $18,169,841. In 2015, 96% of U.S states reported the use of online smoking cessation services; total direct calls to state quitlines were 1,336,602 in 2012, falling to 1,065,408 in 2015. Mean calls fell from 26,206 to 22,668 in the same period.  |
| Sadasivam, R (2012) | Before-after study pre-pilot for a large RCT; N=204 | U.S | Test online components and function of the Decide2Quit.org. Test effect of tailored messaging on return visits; effect of different functions of site on smoking cessation. | - Demographics- Logins and site activity.- Smoking cessation at 6-months. | Use of tailored emails dramatically increased participation for a short period. Researchers also found varied effects of the different functions. Functions supporting “seeking social support” (Your Online Community and Family Tools), Healthcare Provider Tools, and the Library had positive effects on quit outcomes. |
| Schaub, M (2015)  | Three-arm RCT; N=308 | Can Reduce – Cannabis cessation program; Switzerland | To test the efficacy of a Web-based self-help intervention with and without chat counselling. | - Demographics- Frequency and quantity used per week. | Number of cannabis use days per week at 3 months had a mean change of 0.7 for self-help without chat and 1.4 for self-help with chat, as well as between self-help with chat and waiting list (mean change 1.0). Self-reported abstinence was significantly different in the self-help without chat study arm (2.0%) than in the self-help with chat study arm (8.8%). |
| Schwarzer, R (2012) | Post-hoc evaluation study; N=13,174 | Germany; 2009-2011. | Study any link between abstinence rates and online activities such as: posting on a bulletin board after a smoke-free day, offering a donation to the program for posting, and posting messages throughout the program. | - Posting behaviour.- Quit rates | Survival analysis for 70 days of self-reported non-smoking documented higher success rates for those who made use of the virtual community activities. Moreover, the effect of making an initial bulletin board entry on 10-week abstinence was mediated by offering a donation and posting messages throughout the course. Shifting the focus from personality characteristics toward behavioural process variables such as intervention engagement might add more substance to smoking cessation studies. |
| Shahab, L (2009)  | Systematic review and meta-analysis; N=11 RCT’s | 1990-2008; 11 relevant randomized controlled trials. | To examine the efficacy and acceptability of online, interactive interventions for smoking cessation and to identify treatment effect moderators. | - Smoking cessation rates. | Web-based, tailored, interactive smoking cessation interventions were effective compared with untailored booklet or e-mail interventions (rate ratio 1.8) increasing 6-month abstinence by 17%. Few moderating or mediating factors were evaluated in studies and those that were had little effect. |
| Sheffer, M (2010)  | Before and after study; N=27,000 | Wisconsin Tobacco Quitline; Wisconsin, U.S | - Increase excise tax.- 2week supply NRT for callers who agreed to multi-session counselling.- State-wide media campaign.- Timed for new year’s resolutions. | - Number of callers. | In contrast to the approximately 10,000 calls received annually from 2002 to 2007, during the fırst 3 months of 2008, the WTQL fıelded a record 27,000 calls (3% of adult smokers); Population reach of quitlines has been modest, typically attracting about 1% of smokers annually and rarely exceeding 3%. California, Colorado, Maine, Minnesota, New York, Ohio, Oklahoma, and Oregon have successfully employed similar innovative strategies to drive consumer demand for quitline services. |
| Skov-Ettrup, L (2016)  | RCT; N=1812 | Denmark | Compare the effectiveness of proactive telephone counselling, reactive telephone counselling and an internet- and text messages-based intervention with a self-help booklet for smoking cessation. | - Abstinence at 12 months.  | Proactive telephone counselling was more effective than a self-help booklet in achieving prolonged abstinence for 12 months (7.3% v 3.6%). No clear evidence of an effect of reactive telephone counselling or the internet- and text-message-based intervention was found compared with the self-help booklet. |
| Skov-Ettrup, L (2014) | Non-randomised controlled trial; N=2030 | Denmark; 2007-2009 | Compare the effectiveness of untailored text messages for smoking cessation to tailored text messages delivered at a higher frequency. | - 30-day point prevalence at 12-months. | Using intention-to-treat, the odds ratio for 30-day point abstinence was 1.28 for the tailored compared with untailored messages. When restricting the analysis to those who had chosen to receive text messages, the corresponding odds ratio was 1.45. The higher long-term quit rates in the group receiving the tailored text messages compared with untailored indicated that tailoring and higher frequency of text messages increases quit rates among young smokers. |
| Strecher, V (2008)  | RCT; N= 1866 | U.S | To determine: (1) If engagement in an online smoking cessation intervention predicts 6-month abstinence, (2) whether demographics predict engagement (3) whether online components influence engagement. | Test 5 online components: high v low-personalised message source, high v low-tailored outcome expectation, efficacy expectation, and success story messages when offered all at once, or sequentially. | The total number of web sections opened was related to subsequent smoking cessation. Participants who were younger, were male, or had less formal education were more likely to disengage from the Web-based cessation program. Personalised source and high-depth tailored self-efficacy components were related to a greater number of Web sections opened.  |
| Struik, L (2014)  | Qualitative thematic content analysis; N=399 posts | Crush the crave smoking cessation Facebook program; 121 original posts and 278 reply posts; 2012-2013 | Characterise the content of posts on the Facebook page of Crush the Crave, an evidence-informed smoking cessation intervention directed toward young adults aged 19 to 29 years. | - Thematic content analysis.- Demographics | 71.1% of original posts conveyed support of smoking cessation through 7 subthemes: encouraging cessation, group stimulation, management of cravings, promoting social support, renormalizing smoking, providing health information, and exposing tobacco industry tactics. Two most common replies were user engagement through images, and users sharing smoking related experiences. Although 56% of users were men, posts were made by only 19.8% of men. The study indicates that social networking sites, especially Facebook, warrant inclusion in tobacco control efforts directed towards young adults. |
| Te Poel, F (2009)  | RCT; N=458 | Intervention (computer-tailored e-mail; N = 224) or the control group (generic, non-tailored e-mail; N = 234); Netherlands | Test the efficacy, understandability, credibility and personal relevance of an e-mail-delivered computer-tailored smoking cessation intervention. | - Abstinence at 24hrs and 7 days.- Qualitative acceptance of the intervention | The results 6 months after baseline (N = 195) showed that significantly more participants in the intervention group reported not having smoked in the last 24 hours (21.5%) and 7 days (20.4%) in contrast with participants in the control group (9.8 and 7.8%, respectively). Participants in the intervention group appreciated the computer-tailored e-mail significantly more in terms of understandability, credibility and personal relevance. |
| Thrul, J (2015) | Non randomised controlled trial; N=79 | Participants were assessed for readiness to quit smoking and assigned to one of 7 secret Facebook groups tailored to their stage of change. | Examine engagement generated by content based on the Transtheoretical Model of Behaviour Change (TTM) in a motivationally tailored smoking cessation intervention on Facebook. | - Program engagement. - Number of comments stratified by baseline stage of change.  | Participants not ready to quit in the next 30 days (in Precontemplation or Contemplation) engaged most when prompted to think about the pros and cons of behaviour change, while those in the Preparation stage engaged most when posts increased awareness about smoking and smoking cessation. Findings support tailoring intervention content to readiness to quit.  |
| Ubhi, H (2015)  | Process and outcome evaluation; N=1170 | Preliminary evaluation; England; 2012-2013 | Preliminary evaluation of SF28 (SmokeFree28)-an app aimed at helping smokers to be smoke-free for 28 days. | - Socio-demographic data.- Abstinence at 28 days. | A total of 1170 users met the inclusion criteria. Compared with the average smoker in England trying to quit, they had higher consumption, were younger, more likely to be female, and had a non-manual rather than manual occupation. In total, 18.9% were recorded as being abstinent from smoking for 28 days or longer (compared to 15% in unaided quitting). The mean number of logins was 8.5. The proportion recording abstinence for 28 days or longer was higher in users who were older, in a non-manual occupation, and in those using a smoking cessation medication. |
| Van Mierlo, T (2012) | Cross-sectional study comparing two groups; N=32,546 | Canada | To analyse data from two large but distinct web-assisted tobacco interventions to help gain insight into super user demographic characteristics and how they use smoking cessation forums. | - Demographics.- Online forum posting behaviour.  | 21,128 individuals registered for the Canadian Cancer Society's Smokers' Helpline Online (SHO) and 11,418 registered for the StopSmokingCenter.net (SSC). Within the same period, 7.90% of registrants made at least one post in the SHO, and 14.25% registrants made at least one post in the SSC social network. SHO and SSC super users accounted for 0.4% and 1.1% of all registrants, and 5.7% and 7.62% of all social network participants, and contributed to 34.78% and 46.22% of social network content, respectively. As super users drive network traffic, organisations should dedicate resources to encourage super user participation. |
| Webb, T (2010)  | Systematic review and meta-analysis; 85 studies; N=43,236 | U.S | Compare internet interventions for health behaviour change that use, or don’t use recognised behavioural change theories. | - Behaviour change.- Achieving primary outcome variables.- Achieving secondary outcome variables.  | More extensive use of theory was associated with increases in effect size, and, in particular, interventions based on the theory of planned behaviour tended to have substantial effects on behaviour. Interventions that incorporated more behaviour change techniques also tended to have larger effects compared to interventions that incorporated fewer techniques. Finally, the effectiveness of Internet-based interventions was enhanced by the use of additional methods of communicating with participants, especially the use of short message service (SMS), or text, messages. |
| Wen, K (2014)  | Before- after study; N=30 | U.S | Describe the development of a social-cognitive theory-based and evidence-guided text messaging intervention |  | Developmental process suggests that the application of theory and best practices in the design of text messaging smoking cessation interventions is not only feasible but necessary for ensuring that the interventions are evidence based and user-centred. |
| Whittaker, R (2009) | Comprehensive literature review; 4 studies included. | Comprehensive search of mobile-based interventions for smoking cessation; New Zealand, UK, and two in Norway. | Determine whether mobile phone-based interventions are effective at helping people who smoke to quit. | - Short term quit rates.- Homogeneity of methods. | Four trials were included: a text message programme in New Zealand; a text message programme in the UK; and an Internet and mobile phone programme involving two different groups in Norway. When combined by meta-analysis the text message programme trials showed a significant increase in short-term self-reported quitting (RR 2.18). Evidence shows no effect of mobile-phone based smoking cessation in the long-term, but some evidence of success in short term cessation.  |
| Whittaker, R (2011)  | RCT; N=226 | Intervention built on social cognitive theory; New Zealand; | Assess the effectiveness of a multimedia mobile phone intervention for smoking cessation. | Abstinence, confidence, quit attempts,   | Drew on social cognitive theory to inform the use of role models via short video messages providing observational learning. May be that the complex theory-based intervention is no more effective than simple less-frequent video messages from researchers. |
| Whittaker, R (2012)  | Comprehensive literature review; 5 studies included. | Comprehensive search of mobile-based interventions for smoking cessation; 3 involving text messaging; 1 combined text messaging and online; 1 video messaging intervention. | Determine whether mobile phone-based interventions are effective at helping people who smoke, to quit. | - Short-term quit rates.- Long-term quit rates.  | Mobile phone interventions were shown to increase the long term quit rates compared with control programmes (RR 1.71, over 9000 participants), using a definition of abstinence of no smoking at six months since quit day but allowing up to three lapses or up to five cigarettes. |
| Whittaker, R (2016) | Comprehensive literature review; 12 studies included. | Searched Cochrane Tobacco Addiction Group; UK Clinical Research Network Portfolio; ClinicalTrials.gov register; authors of ongoing studies; text message-based; combined text message with clinic visits; phone counselling. | Determine whether mobile phone-based smoking cessation interventions increase smoking cessation in people who smoke and want to quit. | - Attrition rates.- 6-month cessation rates.- Biochemical verification.  | All 12 studies pooled using their most rigorous 26-week measures of abstinence provided an RR of 1.67. Six studies verified quitting biochemically at six months (RR 1.83). Current evidence supports a beneficial impact of mobile phone-based smoking cessation interventions on six-month cessation outcomes. While all studies were good quality, the fact that those studies with biochemical verification of quitting status demonstrated an even higher chance of quitting further supports the positive findings. |
| Woodruff, S (2007) | RCT; N=136  | Participants from high-schools randomised into either intervention or measurement only control group; U.S | To evaluate an internet virtual world chat room for adolescent smoking cessation. | - Past-week abstinence.- Days smoked in past week.- Cigarettes/day.- Quit attempts.- Latency of first cigarette.- Intention to quit.  | Participants were significantly more likely than controls to report immediately post-intervention to have abstained from smoking during the past week, smoked fewer days in the past week, smoked fewer cigarettes in the past week, and considered themselves a former smoke. Only the number of times quit was statistically significant at a one-year follow-up assessment. Lack of long-term results could indicate periodic program ‘boosters’ are needed over time. |
| World Health Organization (2011) | Leading tobacco control body manual |  | Manual for developing and improving national toll-free tobacco quit line services. |  | Need to encourage patient-driven referral (encouraging patients to call and giving them the quit-line number on a card or a brochure). Also need higher provider-driven referral (done by fax, where the health-care providers, or their staff, send the name of the interested patient directly to the quit line with their phone number; the quit line then calls the patient directly) |