



Health Promotion Campaigns and Mass Media: Looking for Evidence

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Abstract

Background: Public health programs may benefit from use of mass media to promote positive health behaviours, but there is not clear evidence about their impact. This study consisted in a literature review that explores the relationship, in terms of methodology and effectiveness, of the interventions for health promotion carried out by the use of mass media in the last fifteen years.

Methods: PubMed, CINAHL, COCHRANE CCTR, EPPI-CENTRE TRoPHI, TRIP Database, SCOPUS and WEB OF SCIENCE were searched for studies, published between 2000 and 2014, focusing on health promoting campaigns using not interpersonal channels of communication (mass media, such as television, radio, newspapers, billboards, posters, leaflets). Abstracts of them were examined respect media tools, health topics, target age groups, programmes duration, outcomes (Knowledge, Attitude, Practice - KAP)

Results: Among 10571 publications 50 studies related to use of mass media in health preventing campaigns were included in the review. A single media was used in the majority of the programs (58%) and television resulted the most used (26%), while 26% utilized mix of media and 16% all media together. Health topics of the programs were: tobacco control (28%), substances misuse (18%), physical activity (18%), and sexual health (12%). Sixty eight percent of campaigns were directed to a single age class and adults were the most frequently involved (42%). Thirty two percent of programs addressed two or more age groups. Programs reporting at least one statistically significant improvement in outcome indicators categories were 68%.

Conclusion: A standardised approach is needed to contribute to the progress of the scientific knowledge in the field of the implementation of public health intervention using mass media. This literature review highlights valuable points of discussion about the integration of different methodologies and tools to enhance the impact of the campaigns in the field of health promotion.

Keywords: Health Promotion; Media Communication; Social Marketing

Introduction

Public health programs focused on health promotion and prevention are in the agenda of European countries but further attention and investments are needed to better understand the best way to make them successful [1,2].

Communicating a broad range of health messages to a wide variety of audiences is challenging and in this context the role of mass media (such as television, radio, newspapers, billboards, posters, leaflets) is fundamental [3].

Social marketing, that promote ideas, attitudes and behaviours to achieve goals for social good through the marketing principles and techniques, often use mass media tools to communicate [4]. Nevertheless, use and effectiveness of media in programs promoting healthy behaviours are not well defined.

The increasing fragmentation and cluttering of media environment and the opposing messages, the persuasive marketing for competing products and power of social norms, make difficult to evaluate its independent effects.

Recently only two reviews on mass media and health promotion were published. Clar et al. [5] mapped the existing research in the area of digital media use in public health and investigated the interdisciplinary aspects of quality and ethics that could contribute to this field on the basis of studies published between the start of 2000 and the end of June 2013. Furthermore, Robinson et al. [6] conducted a systematic review (search period, January 1980–December 2009) to evaluate the effectiveness of health communication campaigns that use multiple

channels, including mass media, and distribute health-related products.

The aim of this literature review is to assess the use of mass media in health promotion programs and to point out the strengths and the weaknesses of available experiences. The research will provide recommendations for further health promotion campaigns by evaluating their impact on population throughout outcomes in Knowledge, Attitude and Practice (KAP) [7].

Materials and Methods

The review was carried out according to the recommendations of literature review methodology by Pautasso [8]. Publications in English were identified through searches of medical and scientific electronic databases using the following keywords combination: social marketing/media/health. The syntax was as follows:

- ("social marketing" OR ("social" AND "marketing") OR "social marketing") AND "media" for medical databases: MEDLINE (PubMed), CINAHL, COCHRANE CCTR (Central Register of Controlled Trials), EPPI-CENTRE TRoPHI (The Trials Register of Promoting Health Interventions), TRIP Database.

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Received May 15, 2015; **Accepted** June 02, 2015; **Published** June 09, 2015

Citation: Quattrin R, Filiputti E, Brusaferrò S (2015) Health Promotion Campaigns and Mass Media: Looking for Evidence. Primary Health Care 5: 190. doi:10.4172/2167-1079.1000190

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- (“social marketing” OR (“social” AND “marketing”) OR “social marketing”) AND “media” AND “health” for general scientific databases: SCOPUS (the search was limited to social sciences, psychology, art and humanities, neurosciences and multidisciplinary) and WEB OF SCIENCE (the search was limited to healthcare science services, psychology, communication, sociology, behavioural sciences, social issues, social sciences, telecommunication).

It was chosen not to limit publication status. Searches were updated to 1st September 2014.

Inclusion and exclusion criteria were defined focusing on health promoting campaigns using mass media (such as television, radio, newspapers, billboards, posters, leaflets) that, not being interpersonal channels of communication, have the potential to reach a large portion of the community and do not depend on person-to-person contact [3,9]. In developed countries mass media are among the tools used in programs aimed at influencing health knowledge, attitudes and behaviours of a large proportion of the population.

Inclusion criteria were the following: programs focused on health promotion and prevention delivered by mass media or multimedia campaigns; programs conducted in the period 2000-2014; programs reporting quantitative data on effectiveness; programs implemented in Europe, USA, Canada, New Zealand, Australia.

Exclusion criteria were

- link to commerce: studying consumers preferences/behaviour, influencing the purchase of products/services (even if health related), promoting professionals private practices (even if healthcare activities);
- focus on one phase of a campaign only (pilot, planning, evaluation studies, experiments).
- education of healthcare professionals
- focus on the social system (i.e. family planning), environment, agriculture, medical tourism, civic education;
- focus on clinical topics (i.e. care, therapies, organ donation);
- presentation of qualitative data
- combined impact of multiple strategies without establishing the independent role and/or the unique effect of mass media components (data that cannot be identified);
- using an interpersonal approach (face to face contact, or telephonic conversation, focus group, peer-delivered education, peer-led activities, community health activities, family support, info points, stands, clinic visits) and/or not considering media as tools reaching a large number of people independently of person to person contact;
- focus on minority populations or ethnic subgroups (i.e. indigenous, aborigines) with cultures different from the western one.

Documents were selected first by reading the titles and available abstracts and then by text analysis. Duplicates and papers, that did not meet the inclusion criteria, were not considered. Finally, 50 programs were included in the review.

The 50 programs, reporting quantitative data, were explored and classified according to:

- Media tool (technologies and methodologies): print (i.e. book/article, leaflet/brochure, billboard/posters, gadgets and all printed material), radio (i.e. cd, radio spot), television (i.e. TV film/movie/video/spot, display), computer (i.e. CD ROM, WEB-site, social networks), and their possible combinations. The “Media combination” category was used to include programs using more than one media.

- Health topic: tobacco control (i.e. smoking cessation and decrease), substance misuse (i.e. alcohol, drugs, doping), sexual health (i.e. HIV, Chlamydia), physical activity, chronic diseases (i.e. asthma, low back pain), mental health (i.e. depression, sexual abuse), cancer (i.e. breast, skin), obesity and overweight, and vaccinations. Programs that were not enough to constitute a separate category were included in the “other topics” category.

- Target age group: children (0-12 years), adolescents (13-18 years), adults (19-64 years), aged (≥ 65 years). The “Multi target” category was used to include programs targeting more than one age group or when the target was not specified.

- Program duration: days (< 7 days), weeks (≥ 7 days - < 4 weeks), months (≥ 4 weeks - < 12 months), years (≥ 1 year), not specified;

- Outcome categories: Knowledge (campaign and/or message awareness, comprehension, remembering, recall), Attitude (reactions, beliefs, intentions, motivations) and Practice (behaviour change, health outcomes, impact) [7].

Studies were classified effective if the authors reported a statistically significant improvement in some of the KAP outcome indicators in the article, while they were categorized not effective if in the results authors reported no significant *p-value* for none outcome indicators or they did not calculate it.

Data analysis was performed using the statistical software SPSS, version 20 and the Chi-square test. Statistical significance was defined as $p \leq 0.05$.

Results

Databases search collected 10571 publications. Due to the amount of data identified, two reviewers excluded studies by detecting the first

		N. PROGRAMS Tot = 50		N. EFFECTIVE PROGRAMS Tot = 34/50 (68%)	
		%	N	%	N
TOPIC	Tobacco control	28	14/50	78.6	11/14
	Substances misuse	18	9/50	88.8	8/9
	Physical activity	18	9/50	44.4	4/9
	Sexual health	12	6/50	66.6	4/6
	Other topics	24	12/50	58.3	7/12
MEDIA	TV	26	13/50	61.5	8/13
	PC	16	8/50	87.5	7/8
	Print	14	7/50	71.4	5/7
	Radio	2	1/50	100	1/1
	All media together	16	8/50	62.5	5/8
	Media combinations	26	13/50	61.5	8/13
TARGET	Adults	42	21/50	66.6	14/21
	Adolescents	18	9/50	100	9/9
	Children	6	3/50	66.6	2/3
	Aged	2	1/50	0	0/1
	Multi target	32	16/50	56.2	9/16

Table 1: Distributions of programs and of effective ones (presence of at least one chosen indicator significantly improved) by topic, media, target.

		KNOWLEDGE 32% (10/31)		ATTITUDE 50% (14/28)		PRACTICE 68.7% (22/32)		TOT. 50.5% (46/91)v	
		%	N	%	N	%	N	%	N
TOPIC	Tobacco control	-	0/6	70	7/10	87.5	7/8	58.3	14/24
	Substances misuse	60	3/5	50	2/4	100	6/6	73.3	11/15
	Physical activity	14.3	1/7	33.3	2/6	42.8	3/7	30	6/20
	Sexual health	40	2/5	66.6	2/3	66.6	2/3	54.5	6/11
	Other topics	50	4/8	20	1/5	50	4/8	42.8	9/21
MEDIA	TV	-	0/6	57.1	4/7	85.7	6/7	50	10/20
	PC	100	2/2	100	5/5	83.3	5/6	92.3	12/13
	Print	66.6	4/6	-	0/4	33.3	1/3	38.5	5/13
	Radio	-	0/1	-	-	100	1/1	50	1/2
	All media together	16.6	1/6	-	0/2	66.6	4/6	35.7	5/14
	Media combinations	30	3/10	50	5/10	55.5	5/9	44.8	13/29
TARGET	Adults	33.3	5/15	57.1	8/14	77.7	7/9	52.6	20/38
	Adolescents	50	2/4	66.6	4/6	100	6/6	75	12/16
	Children	33.3	1/3	-	0/1	50	1/2	33.3	2/6
	Aged	-	0/0	-	0/1	-	0/1	-	0/2
	Multi target	22.2	2/9	33.3	2/6	57.1	8/14	41.4	12/29

Table 2: Distribution of indicators with statistically significant improvement (presence of at least one chosen indicator significantly improved) according to outcome categories by topic, media and target.

exclusion criterion reported in the publication abstracts. After this analysis 50 studies were identified.

Table 1 shows the distribution of programs and effective programs (presenting at least one significant improvement in the chosen outcome indicators - KAP) by topic, media and target.

All the programs were focused only on one health topic. Other topics include obesity and overweight (8%, 4/50), cancer (6%, 3/50), chronic diseases (4%, 2/50), mental health (4%, 2/50), and vaccinations (2%, 1/50).

A single media was used in the majority of the programs (58%, 29/50), while 26% (13/50) of the campaigns adopted an approach based on a mix of media: print+TV (8%, 4/50), print+radio+TV (8%, 4/50), print+radio (4%, 2/50), radio+TV (4%, 2/50), print+TV+PC (2%, 1/50).

Sixty eight percent (34/50) of campaigns were directed to a single age group. Thirty two percent (16/50) of programs addressed two or more age groups: adults+aged (12%, 6/50), adolescents+adults+aged (6%, 3/50), adolescents+adults (4%, 2/50), children+adults (2%, 1/50), in the 8% (4/50) the target was not specified.

Most campaigns lasted months (46%, 23/50) or years (38%, 19/50) whereas short term campaigns (with a duration < 4 weeks) were rarely used: 6% (3/50) lasted weeks and 6% (3/50) days. Two studies did not specify the period of the campaign.

Thirty four out of 50 programs (68%) reported at least one statistically significant improvement in the chosen outcome indicators. Sixty two percent (31/50) of the studies evaluated the program impact on knowledge and 32.2% (10/31) reported at least one statistically significant improvement. Among them, 83.9% (26/31) measured campaign awareness [15.4% (4/26) were effective]; and 51.6 (16/31) measured message awareness [37.5% (6/16) were effective]. Fifty

six percent (28/50) of the studies evaluated the program impact on attitude and 50% (14/28) reported at least one statistically significant improvement. Among them, 39.3% (11/28) measured reaction change [45.5% (5/11) of them were effective]; 46.4% (13/28) belief change [53.8% (7/13) were effective]; and 71.4% (20/28) intention change [50% (10/20) were effective].

Sixty four percent (32/50) of the studies evaluated the program impact on practice and 68.7% (22/32) reported at least one statistically significant improvement. Among them, 93.8% (30/32) measured behavior change [70% (21/30) were effective]; and 21.9% (7/32) measured health outcomes [42.8% (3/7) were effective]. Two studies measured the intervention impact but no statistically significant results were found.

Greater effectiveness can be seen in programs related to substances misuse (73.3%, 11/15) and tobacco control (58.3%, 14/24), in computer-based interventions (92.3%, 12/13) and in campaigns targeting adolescents (75%, 12/16) and adults (52.6%, 20/38). Table 2 shows the distribution of indicators with a statistically significant improvement according to outcome categories by topic, media and target.

A short description of the chosen indicators in the 50 selected programs is summarized in Table 3.1 and Table 3.2, according to target, media used and outcome broad categories.

Discussion

Despite the long period considered by the literature review (from 2000-2014) the experiences on the use of mass media in health promotion and prevention, reported as a scientific paper evaluating the outcomes, are few: 50 in fourteen years. The review highlighted the difficulty of comparing the studies and their results, due to the great variability of media used, intended audiences, methods adopted to implement the programs and to measure their results, and the small

AGE TARGET	MEDIA	KNOWLEDGE		ATTITUDES		PRACTICE	
		Statistically significant	Not significant	Statistically significant	Not significant	Statistically significant	Not significant
ADULTS/ AGEDS	PRINT	Asthma [10] and alcohol [11] campaigns. Message on doping issues [12].	Message on asthma symptoms [10]. Anti alcohol campaign [13].		Perceived negativity of excessive drinking [13]. Doping necessity in physical activity [12].	Take flu shot [14].	Go to the doctor with asthma symptoms and amelioration of asthma symptoms [10].
	RADIO		Campaign and message on anti alcohol [15].			Discuss with children about alcohol [15].	
	TV		Campaigns and message on tobacco dangers [16,17], on diet/physical activity [18] and on nutrition [18].	Admit cigarette companies negative action [20]. Quit smoking [18,20].	Admit tobacco dangers.[17,20] Intend to quit smoking [17,21]. Interests about nutrition [19].	Try to quit smoking [16].	Modify smoking habits [22].
	PC	Messages on HIV [23].		Have safe sex [23]. Get physical activity [24]. Stop smoking [25].		Tobacco abstinence [25]. Smoking cessation [26]. Ameliorations in Body Mass Index and Metabolic Equivalent with physical activity [24].	
	PRINT + RADIO		Campaign on breast cancer [27].				Take preventive measures for breast cancer [27].
	PRINT + TV	Messages on sexual abuse [28].	Campaign and messages on physical activity [29].		Take information about physical activity [30]. Intention to be more active [29,30].	Prevent behaviors towards sexual abuse [28].	Be physically active [30].
	RADIO + TV		Campaign and messages on tobacco dangers [31].	Agreement with tobacco dangers [31].	Quit smoking [31].		
	PRINT + RADIO + TV	Campaign on drinking and driving [32].	Campaign on smoking dangers [33].	Agreement with negative correlation of drink and driving [32]. Agreement with smoke dangers [33].		Alcohol consumption [34]. Not driving after drinking and decrease of alcohol related crashes [32]	
	ALL MEDIA TOGETHER		Campaign and message on physical activity [35]. Campaign on parent-child communication about sex [36].			Speak about sex and visit a sexual education website [37].	Be physically active and lose weight [35].

Table 3.1: Review evidences by intended audiences, media type, and outcomes.

number of experiences for each topic. Nevertheless, to find clear evidences from the sum of health promotion and prevention programs using mass media is arduous.

In this literature review following evidences emerge:

Media tool

Television was the most used media tool in health promotion and prevention programs whereas the computer was the most effective, especially among adolescents. These findings confirm the literature reporting that a message combining different techniques (text, audio, still images, animation, video, or interactivity content forms) seems to be associated with greater success in health promotion programs [59].

Health topic

The reviewed studies focused on topics widely recognized as priorities in all countries [2], such as smoke, substance misuse, physical activity and sexual health. However, only few papers reported emerging health problems such as cancer, chronic diseases, mental health, vaccinations, although they have large impact on public health

[1] and could be addressed by mass media tools [9]. Tobacco control was the more frequent topic in the analyzed campaigns. This could be due to the fact that smoking is the leading preventable cause of illness and premature death in the world [60]. Programs for tobacco control had an impact on attitudes (e.g. smoking intention and motivation) among adolescents and adults [16,20,22,25,31,33,43]. An impact was also found on behaviors such as smoking cessation and abstinence from tobacco among adolescents and adults [16,25,26,40,43,46]. A television campaign obtained an increase in the number of calls to an antismoking telephone, but the intended audience was not specified [55]. Among the programs on preventing substance misuse, alcohol campaigns were known among adults [11,32]. A computer-based campaign was successful in decreasing alcohol consumption in adolescents [44], whereas another one, using a mix of mass media (print, radio and television) and targeting adults, was effective both in reducing alcohol use and in driving after drinking. The same campaign also reduced alcohol related crashes [32]. A radio and television-based program was effective in decreasing the use of marijuana among adolescents [45]. Programs promoting physical activity were effective in increasing knowledge about physical activity and practice among

AGE TARGET	MEDIA	KNOWLEDGE		ATTITUDES		PRACTICE	
		Statistically significant	Not significant	Statistically significant	Not significant	Statistically significant	Not significant
ADOLESCENTS	PRINT	Message on depression symptoms and treatments [38].	Campaign on depression [38].		Believe in depression treatments efficacy [38].		
	TV		Antitobacco campaign [39].		Believe in smoke dangers [39].	Decrease smoking [40] and marijuana use [41].	
	COMPUTER	Message on HIV [42].		Attitudes through smoking [43], condom use and waiting to have sex [42].		Resistance to smoking [43]. Alcohol consumption [44].	
	RADIO + TV			Attitudes through marijuana use [45].		Decrease of marijuana use [45].	
	ALL MEDIA TOGETHER		Antitobacco campaign and messages [46].		Intention to quit smoking [46].	Try to quit smoking [46].	
CHILDREN	PRINT + RADIO		Campaign on physical activity [47].		Request information about physical activity [47].		Be physically active [47].
	ALL MEDIA TOGETHER	Campaign on physical activity [48].	Campaign on physical activity [48].			Be physically active [48].	
CHILDREN + ADOLESCENTS	PRINT + TV		Campaign on physical activity [49].		Intention to be more active [49].		Be physically active [49].
ADOLESCENTS + ADULTS	PRINT		Campaign on sexual health/HIV [50].		Intention to use the condom [50].		Condom use [50].
	ALL MEDIA TOGETHER		Campaign on chlamydia test [51].			Chlamydia test uptake [51].	Chlamydia notifications [51].
ADOLESCENTS + ADULTS/AGEDS	ALL MEDIA TOGETHER				Attitudes through low back pain prevention [52].		Surgical procedures for disc herniation and sickness days from low back pain [52].
	PRINT + RADIO + TV		Campaign on physical activity [53].	Be more physical active [53].		Be physical active [53].	
	TV			Get a suntan to prevent cancer skin. [54]		Use of sun protections, limiting exposure to sun and decrease of sunburns [54].	
NOT SPECIFIED	TV					Call antismoking telephone [55]. Use of sun protection [56].	
	PC						Weight losing [57].
	PRINT + TV + PC	Message on correct quantity of sugar in soda [58].	Campaign on soda consumption [58].		Attitudes through daily consumption of soda [58].		

Table 3.2: Review evidences by intended audiences, media type, and outcomes.

children [48] and in increasing the beliefs on advantages of physical activity and the intentions to get physical exercises in adolescents and adults [53]. A campaign based on a mix of media increased physical activity in adults [35]. Sexual health campaigns focused on HIV, sex safety and sexual abuse. Computer-based programs increased, among adolescents, the awareness about HIV, the good opinion on

messages on condom use and the intention to wait to have sex [42]. Other campaigns on sexual education improved knowledge on HIV and beliefs in safe sex among adults [23] and increased the number of Chlamydia tests among adolescents and adults [57]. Two campaigns were successful in preventing cancer skin by increasing sun protection use, limiting sun exposure and decreasing sunburns [54-56]. In the field

of chronic diseases, the program on asthma did not increase knowledge about asthma symptoms among adolescents, even if campaigns were known [10]. In the field of mental health there was only a campaign that increased knowledge in depression symptoms and treatments among adolescents [38]. A program delivered through print materials obtained an increase of flu vaccinations rates among adults and elders [14].

Target age group

Regarding the intended audience, adults and adolescents were the most frequently involved groups in the campaigns, whereas in the one third of cases, programs were addressed to different age classes of population at the same time. These data are not in accordance with the literature reporting that new generations (6-18 years) are the recommended target in primary prevention because children and young people are more exposed to media, more receptive to environmental stimulus and more adaptable to change than adults [61,62].

Program duration

Effectiveness of long lasting (months or years) campaigns was similar to shorter (weeks) campaigns.

Outcome

The main goal of prevention programs is promoting healthy behaviors. The review showed that 69% of the considered programs persuaded people to change their behaviors, 32% of campaigns modified knowledge and 50% of them revised attitudes in intended audience. This confirms that mass media campaigns could produce positive changes or prevent negative changes in health-related behaviors in society [3].

Conclusion

This review highlights both the large impact that mass media could have on health-related knowledge/attitudes/behaviors and the difficulty to find some definitive conclusions about mass media use in health promotion programs due to the heterogeneity of the existing campaigns.

However, data provide a general overview of the available published literature on health promotion through mass media that could be used as a starting point to develop new programs. In fact, to establish the effectiveness of mass media, it is necessary to collect/carry out and compare an adequate number of studies testing the surveyed media, separately from other media, targeting the same well defined audience and evaluating the same goals.

Next studies should address important public health issues that have not been adequately considered up to now, such as cancer, chronic diseases, mental health, and vaccinations. The fact that the computer resulted the most effective media calls for further experiments on computer/web-based communication to convey health information.

Acknowledgement

The study was performed without external support or funding. Preliminary results have been presented as poster at the 6th European Public Health Conference (Brussel, 13-16 November 2013).

References

1. World Health Organization (2013) The European health report 2012. Charting the way to well-being.
2. World Health Organization (2014) Health behaviors and incentives. Eurohealth: 20.
3. Wakefield MA, Loken B, Hornik RC (2010) Use of mass media campaigns to change health behaviour. *Lancet* 376:1261-1271.

4. French J, Blair-Stevens C, McVey D, Merritt R (2010) *Social Marketing and Public Health. Theory and Practice*. Oxford Scholarship Online.
5. Clar C, Dyakova M, Curtis K, Dawson C, Donnelly P, et al. (2014) Just telling and selling: current limitations in the use of digital media in public health. A scoping review. *Public Health* 128:1066-1075.
6. Robinson MN, Tansil KA, Elder RW, Soler RE, Labre MP, et al. (2014) Mass Media Health Communication Campaigns Combined with Health-Related Product Distribution. A Community Guide Systematic Review. *Am J Prev Med* 47:360-371.
7. Kalyaperumal K (2004) Guideline for Conducting a Knowledge, Attitude and Practice (KAP) Study Community. *Ophthalmology* 4:33-37.
8. Pautasso M (2013) Ten Simple Rules for Writing a Literature Review. *PLoS Comput Biol* 9:e1003149.
9. Abrams LC, Maibach EW (2008) The effectiveness of mass communication to change public behavior. *Annu Rev Publ Health* 29:219-234.
10. Briones K, Lustik F, LaLone J (2010) Could it be asthma? Using social marketing strategies to increase parent and caregiver knowledge of asthma symptoms in children in a rural community. *Health Promot Pract* 11:859-866.
11. Vinci DM, Philen RC, Walch SE (2010) Social norms tactics to promote a campus alcohol coalition. *AJHE* 41:29-37.
12. James R, Naughton DP, Petróczi A (2010) Promoting functional foods as acceptable alternatives to doping: potential for information-based social marketing approach. *J Int Soc Sports Nutr* 7:37.
13. Ricciardelli LA, McCabe MP (2008) University students' perceptions of the alcohol campaign: "Is Getting Pissed Getting Pathetic? (Just Ask Your Friends)". *Addict Behav* 33:366-372.
14. McCaul KD, Johnson RJ, Rothman AJ (2002) The effects of framing and action instructions on whether older adults obtain flu shots. *Health Psychol* 21:624-628.
15. Surkan PJ, Dejong W, Herr-Zaya KM, Rodriguez-Howard M, Fay K (2003) A paid radio advertising campaign to promote parent-child communication about alcohol. *J Health Commun* 8:489-495.
16. Vallone DM, Duke JC, Cullen J, McCausland KL, Allen JA (2011) Evaluation of EX: a national mass media smoking cessation campaign. *AJHE* 101:302-309.
17. Durkin S, Wakefield M (2010) Comparative responses to radio and television anti-smoking advertisements to encourage smoking cessation. *Health Promot Int* 25:5-13.
18. Berry, TR, Spence JC, Plotnikoff RC, Bauman A, McCargar, et al. (2009) A mixed methods evaluation of televised health promotion advertisements targeted at older adults. *Evaluation and Program Planning* 32:278-288.
19. Wardle J, Rapoport L, Miles A, Afuape T, Duman M (2001) Mass education for obesity prevention: the penetration of the BBC's 'Fighting Fat, Fighting Fit' campaign. *Health Educ Res* 16:343-355.
20. Richardson AK, Green M, Xiao H, Sokol N, Vallone D (2010) Evidence for truth@: the young adult response to a youth-focused anti-smoking media campaign. *Am J Prev Med* 39(6):500-506.
21. Murphy-Hoefler R, Hyland A, Higbee C (2008) Perceived effectiveness of tobacco countermarketing advertisements among young adults. *Am J Health Behav* 32:725-734.
22. Wakefield MA, Loken B, Hornik RC (2010) Use of mass media campaigns to change health behaviour. *Lancet* 376:1261-1271.
23. Bowen A, Horvath K, Williams M (2007) A randomized control trial of Internet-delivered HIV prevention targeting rural MSM. *Health Educ Res* 22:120-127.
24. Plotnikoff RC, McCargar LJ, Wilson PM (2005) Efficacy of an E-mail Intervention for the promotion of Physical Activity and nutrition Behavior in the Workplace Context. *Am J Health Promot* 19 :422-429.
25. Lenert L, Muñoz RF, Perez JE, Bansod A (2004) Automated e-mail messaging as a tool for improving quit rates in an internet smoking cessation intervention. *J Am Med Inform Assoc* 11:235-240.
26. Swartz LH, Noell JW, Schroeder SW, Ary DV (2006) A randomised control study of a fully automated internet based smoking cessation programme. *Tob Control* 15:7-12.
27. Page A, Morrell S, Tewson R, Taylor R, Brassil A (2005) Mammography

- screening participation: effects of a media campaign targeting Italian-speaking women. *Aust N Z J Public Health* 29:365-371.
28. Rheingold AA, Campbell C, Self-Brown S, de Arellano M, Resnick H, et al. (2007) Prevention of child sexual abuse: evaluation of a community media campaign. *Child Maltreatment* 12:352-363.
 29. Peterson M, Abraham A, Waterfield A (2005) Marketing physical activity: lessons learned from a statewide media campaign. *Health Promot Pract* 6:437-446.
 30. John-Leader F, Van Beurden E, Barnett L, Hughes K, Newman B (2008) Multimedia campaign on a shoestring: promoting 'Stay Active – Stay Independent' among seniors. *Health Promot J Austr* 19:22-28.
 31. Durkin S, Wakefield M (2010) Comparative responses to radio and television anti-smoking advertisements to encourage smoking cessation. *Health Promot Int* 25:5-13.
 32. Perkins HW, Linkenbach JW, Lewis MA, Neighbors C (2010) Effectiveness of social norms media marketing in reducing drinking and driving: A statewide campaign. *Addict Behav* 35:866-874.
 33. Gagné L (2008) The 2005 British Columbia smoking cessation mass media campaign and short-term changes in smokers attitudes. *J Health Commun* 13:125-148
 34. Glider P1, Midyett SJ, Mills-Novoa B, Johannessen K, Collins C (2001) Challenging the collegiate rite of passage: a campus-wide social marketing media campaign to reduce binge drinking. *J Drug Educ* 31:207-220.
 35. Sharpe PA, Burroughs EL, Granner ML, Wilcox S, Hutto BE, et al. (2010) Impact of a community-based prevention marketing intervention to promote physical activity among middle-aged women. *Health Educ Behav* 37:403-423.
 36. Davis KC, Evans WD, Kamyab K (2013) Effectiveness of a National Media Campaign to Promote Parent-Child Communication About Sex Health Educ Behav 40:97.
 37. Evans WD1, Davis KC, Ashley OS, Blitstein J, Koo H, et al. (2009) Efficacy of Abstinence Promotion Media Messages: Findings from an Online Randomized Trial. *J Adolesc Health* 45:409-416.
 38. Merritt RK, Price JR, Mollison J, Geddes JR (2007) A cluster randomized controlled trial to assess the effectiveness of an intervention to educate students about depression. *Psychol Med* 37:363-372.
 39. Wakefield M, Terry-McElrath Y, Emery S, Saffer H, Chaloupka FJ, et al. (2006) Effect of televised, tobacco company-funded smoking prevention advertising on youth smoking-related beliefs, intentions, and behavior. *Am J Public Health* 96:2154-2160.
 40. Farrelly MC, Nonnemaker J, Davis KC, Hussin A (2009) The Influence of the National truth campaign on smoking initiation. *Am J Prev Med* 36:379-384.
 41. Carpenter CS, Pechmann C (2011) Exposure to the Above the Influence Antidrug Advertisements and Adolescent Marijuana Use in the United States, 2006-2008. *Am J Public Health* 101:948-954.
 42. Roberto AJ, Zimmerman RS, Carlyle KE, Abner EL (2007) A computer-based approach to preventing pregnancy, STD, and HIV in rural adolescents. *J Health Commun* 12:53-76.
 43. Helme DW, Donohew RL, Baier M, Zittelman L (2007) A classroom-administered simulation of a television campaign on adolescent smoking: Testing an activation model of information exposure. *J Health Commun* 2:399-415.
 44. Chiauzzi E, Green TC, Lord S, Thum C, Goldstein M (2005) My student body: a high-risk drinking prevention web site for college students. *J Am Coll Health* 53:263-274.
 45. Palmgreen P, Lorch EP, Stephenson MT, Hoyle RH, Donohew L (2007) Effects of the Office of National Drug Control Policy's Marijuana Initiative Campaign on high-sensation-seeking adolescents. *Am J Public Health* 97:1644-1649.
 46. Klein JD, Havens CG, Carlson EJ (2005) Evaluation of an adolescent smoking-cessation media campaign: GottaQuit.com. *Pediatrics* 116:950-956.
 47. Bellows L, Silvernail S, Caldwell L, Bryant A, Kennedy C, et al. (2011) Parental perception on the efficacy of a physical activity program for preschoolers. *J Community Health* 36 :231-237.
 48. Huhman M, Bauman A, Bowles HR (2008) Initial outcomes of the VERB campaign: tweens' awareness and understanding of campaign messages. *Am J Prev Med* 34(6 Suppl):S241-S248.
 49. Peterson M, Chandlee M, Abraham A (2008) Cost-effectiveness analysis of a statewide media campaign to promote adolescent physical activity. *Health Promot Pract* 9:426-433.
 50. Bull SS, Posner SF, Ortiz C, Beatty B, Benton K, et al (2008) POWER for reproductive health: results from a social marketing campaign promoting female and male condoms. *J Adolesc Health* 43:71-78.
 51. Wilkins A, Mak DB (2007) Sending out an SMS: an impact and outcome evaluation of the Western Australian Department of Health's 2005 Chlamydia campaign. *Health Promot J Austr* 18:113-120.
 52. Werner EL, Ihlebaek C, Laerum E, Wormgoor ME, Indah A (2008) Low back pain media campaign: no effect on sickness behaviour. *Patient Educ Couns* 71:198-203.
 53. Craig CL, Bauman A, Reger-Nash B (2010) Testing the hierarchy of effects model: ParticipACTION's serial mass communication campaigns on physical activity in Canada. *Health Promot Int* 25:14-23.
 54. Dobbins SJ, Wakefield MA, Jansen KM, Herd NL, Spittal MJ, et al. (2008) Weekend sun protection and sunburn in Australia: trends (1987–2002) and association with SunSmart television advertising. *Am J Prev Med* 34:94-101.
 55. Cotter T, Perez DA, Dessaix AL, Bishop JF (2008) Smokers respond to anti-tobacco mass media campaigns in NSW by calling the Quitline. *NSW Public Health Bull* 19:68-71.
 56. Lynch BM, Dunn J (2003) Scoreboard advertising at sporting events as a health promotion medium. *Health Educ Res* 18:488-492.
 57. Carter-Edwards L, Bastian LA, Schultz M, Amamoo MA, Østbye T (2009) An internet-based weight loss intervention initiated by a newspaper. *Prev Chronic Dis* 6:A101
 58. Barragan NC, Noller AJ, Robles B, Gase LN, Leighs MS, et al. (2014) The "Sugar Pack" Health Marketing Campaign in Los Angeles County, 2011-2012. *Health Promot Pract* 15: 208.
 59. Thackeray R, Neiger BL, Hanson CL, McKenzie JF (2008) Enhancing promotional strategies within social marketing programs: use of Web 2.0 social media. *Health Promot Pract* 9:338-343.
 60. Centers for Disease Control and Prevention (2003) Cigarette smoking-attributable morbidity - United States 2000. *MMWR* 52: 66-67.
 61. Roberts DF, Foehr UG (2008) Trends in Media Use. *Future Child* 18:11-37.
 62. Schulz R, Wrosch C, Heckhausen J (2010) A Motivational Theory of Life-Span Development. *Psychol Rev* 117:32.