



A Systematic Review of Awareness Campaigns for Disease Prevention: Evaluating their Effectiveness in Promoting Health Behavior Change



ARTICLE INFO

Article Type

Systematic Review

Authors

Bahmani A.^{1*} PhD

Nili S.² PhD

Doostvandi Sh.¹ MSc

Fakhrelkoneini S.G.¹ MSc

How to cite this article

Bahmani A, Nili S, Doostvandi Sh, Fakhrelkoneini S G. A Systematic Review of Awareness Campaigns for Disease Prevention: evaluating their Effectiveness in Promoting Health Behavior Change. Health Education and Health Promotion. 2023;11(2):223-230.

¹Department of Public Health, Faculty of Health, Kurdistan University of Medical Sciences, Sanandaj, Iran

²Social Determinants of Health Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, Iran

*Correspondence

Address: Public Health Department, Faculty of Health, Kurdistan University of Medical Sciences, Pasdaran Boulevard, Sanandaj, Iran. Postal Code: 66177-13446

Phone: +98 (87) 33286654

Fax: +98 (87) 33625132

a_bahmani59@yahoo.com

Article History

Received: March 24, 2023

Accepted: May 18, 2023

ePublished: June 5, 2023

ABSTRACT

Aims Considering the importance and effectiveness of disease prevention awareness campaigns in healthcare and their limited use in Iran and worldwide, more widespread implementation of these campaigns could have significant positive impacts on public health outcomes. The aim of this study was to evaluate the effectiveness of disease prevention awareness campaigns.

Instruments & Methods For this literature review, we conducted a systematic search of papers published on disease prevention awareness campaigns between 2010 and 2022, in both Persian and English. We limited our search to papers with full text available and searched across multiple credible scientific databases, including ScienceDirect, PubMed, Scopus, Google Scholar, SID and Magiran. We excluded papers that did not align with our research objectives.

Findings Out of the 44 papers searched on disease prevention awareness campaigns, 18 relevant papers were selected and their results were investigated, of which two cases were in Persian and 16 in English. Most areas used in the awareness campaigns were related to diseases, such as acute coronary syndrome, diabetes, cancers, sexually transmitted diseases, and infectious diseases. The results of this study suggested the effectiveness of organizing awareness campaigns in preventing diseases.

Conclusion The evidence suggests that awareness campaigns have had a positive impact on reducing the risk of disease and preventing its development. Therefore, it is important to make concerted efforts to develop effective and appropriate awareness campaigns for all individuals at risk.

Keywords Public Health; Awareness; Prevention and control; Diagnosis

CITATION LINKS

[1] Screening in disease prevention ... [2] The colorectal cancer epidemic: Challenges and ... [3] Challenges and opportunities for primary ... [4] Self-compassion, affect, and health-promoting ... [5] Evaluation of the healthy citizen campaign: A population-based ... [6] Developing a national road traffic safety education ... [7] The impact of public health awareness campaigns ... [8] Effects of information, education, and ... [9] Can a media campaign change health service use ... [10] Assessing the effectiveness of cholera prevention campaign in ... [11] Public awareness of early symptoms of stroke and ... [12] The effectiveness of stroke awareness campaign in promoting ... [13] An evaluation of a national mass media campaign to raise public awareness ... [14] The effect of the world kidney day campaign on the awareness of ... [15] Increasing knowledge on dementia risk reduction in ... [16] Lung cancer stage-shift following ... [17] National awareness campaign to prevent medication-overuse ... [18] The global maternal sepsis study and awareness ... [19] Impact of a public awareness campaign on ... [20] The bowel cancer awareness campaign 'Be Clear on ... [21] GYT: Get yourself tested campaign awareness: Associations ... [22] Evaluating the initial impact of the ... [23] A time series evaluation of the FAST national stroke awareness ... [24] The impact of the UK 'Act FAST' stroke awareness ... [25] A diabetes awareness campaign prevents diabetic ... [26] Evaluation of the 'Healthy Citizen Campaign': A population-based ... [27] Survey evaluation of HIV/AIDS prevention awareness ... [28] Increasing FASD knowledge by a targeted media ... [29] The unique effects of environmental strategies in health ... [30] Harnessing the power of advertising to prevent ... [31] Can a mass media campaign raise awareness of alcohol as a risk factor for ... [32] Population level effects of a mass media alcohol and breast ... [33] Evaluation of the 2008 NSW water ... [34] Are mass mediated health campaigns ... [35] Effects of "10,000 steps Ghent" a whole community ... [36] Wheeling walks evaluation of a media-based community ... [37] Effect of Australia's walk to work day campaign on adults' active commuting and ... [38] Time trends in physical activity in the state of ... [39] A community-wide media campaign to promote walking in a Missouri ... [40] Principles of ... [41] Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: A systematic ...

Introduction

Disease prevention is perceived as specific interventions, both population- and individual-based, for primary and secondary prevention (early diagnosis) to minimize the burden of diseases and their related risk factors [1]. Primary prevention refers to measures that are taken to prevent manifestations of a disease (including measures for health improvement, such as changing the effect of socioeconomic factors on health; presenting information about the risks of behavioral and medical health, and counseling and measures for mitigating them at social and personal levels; nutrition and supplements; educating oral and dental health, as well as clinical preventive services, such as immunization and vaccination of children, adults, the elderly, plus vaccination or prevention post-exposure for those who are subjected to communicable diseases) [2]. Secondary prevention, through early diagnosis, improves the chance of positive health outcomes (these include activities, such as evidence-based screening programs for early diagnosis of diseases or prevention from congenital abnormalities as well as preventive pharmacotherapy with demonstrated effectiveness) [3]. In order to enhance the health literacy of society regarding disease prevention and health promotion, health-promoting behaviors should be done through public awareness campaigns for disease prevention. The campaign to enhance the awareness level of society is used in different areas of public health [4]. Meanwhile, attention to gradual educational approaches to encourage the public to quit risky behaviors with regard to health is increasing. An awareness campaign is considered one of the major components of different types of interventional strategies [5].

An awareness campaign refers to a set of coordinated notification, communication, and educational activities using various notification methods to transmit health promotion messages to a specific population within a specific period along the objectives of the intended program. In some cases, by creating a suitable context, the campaign can help policymakers in their decision-making about health and disease prevention. Awareness campaigns consist of a community of individuals with sufficient information about health promotion programs aimed at establishing sustainable behavioral modification and helping the adoption of proper decisions to improve the health status of individuals [6, 7].

Increasing the health and safety awareness of the audience as well as enhancing the perception and support for health and safety objectives are among the first and most important goals of health awareness campaigns. Disease awareness campaigns are one of the most useful elements in the health care system that guide people to change to eradicate or reduce unhealthy health-related effects [8]. Recently, the mass media campaigns in healthcare have dealt

with various issues, such as public health conferences as well as discussions about special diseases, including campaigns for cardiovascular health, tobacco products, alcohol and drug abuse, nutrition, family planning, controlling cancer, vaccination, psychological health, hypertension, AIDS, etc. [9, 10]. Writing an effective message to the audience is the most important tool in a social campaign. For example, the mass media health campaigns (radio and television stations), alongside their typical programs, usually publish different print products, such as posters, booklets, and brochures. Finally, the health campaign activity consists of trying to inform, persuade, or induce motivation to change the behavior of the audience [11].

Health awareness campaigns have found increasing applications in recent years to transmit encouraging messages to conduct a specific behavior in the target group. Considering the importance and effectiveness of this type of intervention in health care as well as their limited use in Iran, it seems that empowering the health and treatment staff to design and implement these types of interventions and also send effective messages to influence groups the goal is necessary. This study was done due to the lack of sufficient conclusive evidence to investigate different types of interventions in disease prevention awareness campaigns worldwide and in Iran. This research investigated studies conducted in this regard as well as their success rate.

Materials and Methods

The present review aimed to investigate disease prevention awareness campaigns from 2010 to 2022 in Persian and English language scientific journals published either in Iran or other countries. In searching studies, databases, including ScienceDirect, PubMed, Scopus, Google Scholar, SID and Magiran were used.

Databases were searched as follows:

A: Applying filters (time and relationship of studies with the desired intended keywords)

B: Using Boolean operators (AND/OR)

The keywords used in this systematic research were classified into two general groups:

Group I: awareness campaign

Group II: disease prevention

The papers containing the mentioned keywords were chosen. Out of 44 searched papers in the scientific databases, 18 interventional, cross-sectional, and qualitative studies that met the inclusion criteria were chosen, and their findings were investigated. The procedure of paper selection is shown in Figure 1. The inclusion criteria were investigating the effectiveness of awareness campaigns in clinical practice, research, and education, Persian and English papers with full text published between 2010 and 2022, and the presence of the keywords or their equivalents in the title or abstract of the papers.

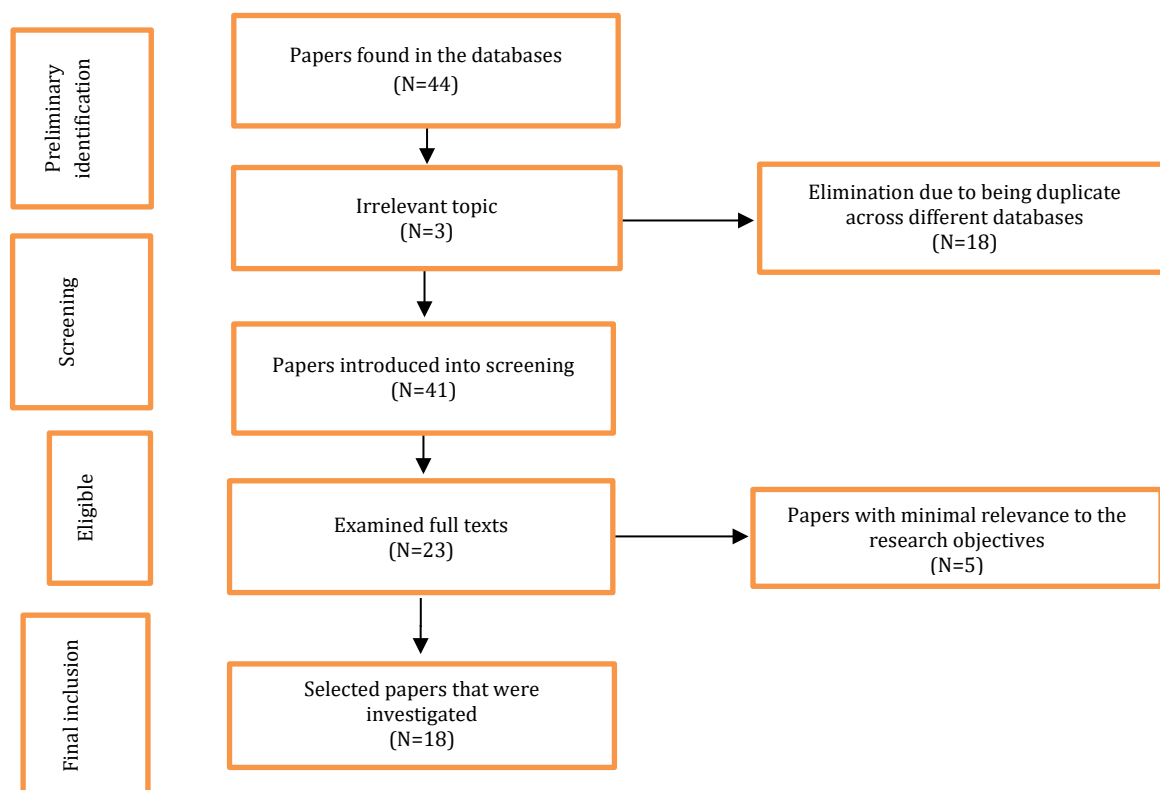


Figure 1) Paper selection process based on the inclusion and exclusion criteria

The exclusion criteria included papers that did not match the research objectives and studies whose full text was not available or had been published as a letter to the editor; Because all studies searched in this paper were not homogeneous, and their results were not combined quantitatively. Data analysis was performed as a comprehensive review of papers, qualitative collation, and final conclusions. After applying the inclusion criteria, the full text of the papers was read and a summary, including the title of the paper, name of the main author, year of publication, studied population, methodology, and study results was extracted.

Findings

The purpose of this study was to investigate the effectiveness of awareness campaigns in disease

prevention in clinical practice and education. After screening for duplicates and irrelevant papers, 18 papers were selected for review. Of these 18 papers, two were published in Persian and 16 in English.

The research settings varied, with five studies conducted in England, three in Iran, two in the US and Australia, and one in Saudi Arabia, Denmark, Ireland, South Korea, Belgium, and Malaysia. Most examined studies were cross-sectional or quasi-experimental in design.

The research subjects included heart attacks and stroke, cancer, headaches induced by indiscriminate use of painkillers, congenital sepsis, healthy citizens, as well as diseases, such as cholera, diabetes, and AIDS. The duration of the awareness campaigns varied across studies, with results presented separately in Table 1.

Table 1) Summarizing the results of examining studies

Author, year, country	Title	Type of study and method	Research population	Results
Bidin et al. [12] 2022, Malaysia	The effectiveness of stroke awareness campaign in promoting knowledge on stroke among the public in Malaysia	Cross-sectional using mass as well as national media along with comprehensive surveys	Adults 18 years old and above	The public behavior about stroke and the way it is admitted were of interest. The results indicated that significant temporal trends had been reported before the awareness campaign for the admission of emergency patients. However, after the awareness campaign, emergency admission decreased and the duration of major actions in response to patients with indications of stroke diminished significantly. Promotion of knowledge, action, and attitude to stroke was observed after the awareness campaign about stroke. The duration of the awareness campaign in this study was six months.

Continue of Table 1 from the last page

Ball <i>et al.</i> [13] 2022, UK	The effectiveness of stroke awareness campaign in promoting knowledge on stroke among the public in Malaysia	Cross-sectional using national mass media and extensive surveys	General practitioners and healthcare personnel	After organizing an awareness campaign, enhanced knowledge and attitude were found in the target group, and the number of diagnosed lung cancers increased, which will improve patient survival rates in the future. The duration of the awareness campaign in this study was four months.
Chin <i>et al.</i> [14] 2010, Korea	The effect of the World Kidney Day campaign on the awareness of chronic kidney disease and the status of risk factors for cardiovascular disease and renal progression	Cross-sectional using news agencies, convention, and medical newspapers as well as the top 10 websites, media advertisements, two radio channels, and warning-broadcasting websites	Those who had referred to routine tests	The extent of awareness about kidney diseases and their risk factors increased from 1.1% before the awareness campaign to 5.8% after it. The duration of this awareness campaign was five months.
Van Asbroeck <i>et al.</i> [15] 2021, Belgium	Increasing knowledge on dementia risk reduction in the general population: Results of a public awareness campaign	Quasi-experimental using press releases for public media, such as newspapers, magazines, radio stations, and other social media messengers	Adults 40-75 years of age in Finland	After the awareness campaign, the knowledge of people increased significantly and more individuals (10 (3%)) became aware of the possibility of reducing the risk of dementia compared to the pre-awareness campaign. Also, more people correctly identified ten out of 12 risk factors of dementia along with the modifiable protective factors examined. This awareness campaign lasted seven months.
Matthew <i>et al.</i> [16] 2018, UK	Change in the stage of lung cancer following awareness campaigns of the disease symptoms in 2011 and 2015	Cross-sectional, use of adverts in clubs, pharmacies, and radio media	Those referring to undergo imaging of the chest cavity and suspected to have lung cancer	The extent of chest X-ray imaging along the awareness campaign increased (80.8% increase). More importantly, the actual number of cases diagnosed with the advanced stage of the disease decreased. The duration of this awareness campaign was 4 years.
Carlsen <i>et al.</i> [17] 2018, Denmark	National awareness campaign to prevent medication-overuse headache in Denmark	Cross-sectional using online news agencies, radio interviews, TV broadcasting, and publishing articles in writing as well as access media, plus printing posters and brochures	General public, General practitioners, and pharmacists	The general public awareness of headaches induced by excessive drug consumption increased by 7% (from 31 to 38%). The duration of the awareness campaign was four months.
Bonet <i>et al.</i> [18] 2018, Africa, America, East Mediterranean, Europe, southeastern Asia, and the western Pacific Ocean	The Global Maternal Sepsis Study and Awareness Campaign (GLOSS): Study protocol	Cohort, prospective using websites, media, conferences, and journals	Women with suspected or confirmed sepsis hospitalized in all WHO-monitored areas worldwide	Along with this awareness campaign, a set of practical criteria was presented for identifying women with severe sepsis infection. The duration of this awareness campaign was seven days.
Nehme <i>et al.</i> [19] 2017, Australia	Impact of a public awareness campaign on out-of-hospital cardiac arrest incidence and mortality rates	Cross-sectional using digital media as well as the press, including TV, radio, newspapers, plus social media adverts, extra professional initiatives, including stories in newspapers as well as distribution of advertisement materials	Women and men 45 years of age and above suffering from cardiovascular disease (CVD)	The results of conducting the awareness campaign were associated with a considerable reduction in the incidence of CVD-related mortality. The duration of this awareness campaign was ten years.
Hall <i>et al.</i> [20] 2016, UK	The bowel cancer awareness campaign 'Be Clear on Cancer': Sustained increased pressure on resources and over-accessed by higher social grades with no increase in cancer detected	Cross-sectional, referring all suspected patients to reference hospitals and carrying out all steps to raise awareness	All patients suspected to have cancer	A considerable increase in the rate of referral of those suspected to have colorectal cancer after the awareness campaign. The duration of this awareness campaign was three months.

Continue of Table 1 from the last page

McFarlane <i>et al.</i> [21] 2015, USA	GYT: Get yourself tested campaign awareness: Associations with sexually transmitted disease/HIV testing and communication behaviors among youth	Cross-sectional using online panels, websites, and social networks	Sexually active youth	Organizers of the awareness campaign in enhancing health-promoting behaviors about sexually transmitted diseases with the centrality of the youth had positive effects. The duration of an awareness campaign in this study was two months.
Mellon <i>et al.</i> [9] 2014, Ireland	Can a media campaign change health service use in a population with stroke symptoms? Examination of the first Irish stroke awareness campaign	Cross-sectional using national and local media, such as TV and radio	Patients suspected to have a stroke	The results showed limited effectiveness of the media awareness campaign and noted that alongside the media awareness campaign, other targeted interventions should be adopted to reduce behavioral obstacles. The duration of the awareness campaign was three weeks.
Alaqeel <i>et al.</i> [22] 2015, Saudi Arabia	Evaluating the initial impact of the Riyadh epilepsy awareness campaign	Cross-sectional using interviews and surveys	Saudi citizens living in Riyadh, 15 years old and above	The awareness campaign for epilepsy considerably increased the general knowledge about epilepsy. The duration of this awareness campaign was four weeks.
Flynn <i>et al.</i> 2014 [23] UK	A time series evaluation of the FAST national stroke awareness campaign in England	Cross-sectional using mass media and websites	A healthy population of the UK	Before the awareness campaign, emergency admission demanded a considerably long time, while after the awareness campaign, this time remarkably decreased. The awareness campaign caused enhanced public awareness about brain stroke and secondary care. The duration of this awareness campaign was four years.
Dombrowski <i>et al.</i> [24] 2013, UK	The impact of the UK 'Act FAST' stroke awareness campaign: Content analysis of patients, witness and primary care clinicians' perceptions	Qualitative using TV commercials, notifications, and advertisements in hospitals	Patients and physicians	The awareness campaign had a positive on physicians and patients. They believed that it was effective in the level of awareness and complete understanding of brain stroke. The duration of this awareness campaign was five months.
King <i>et al.</i> [25] 2012, Australia	A diabetes awareness campaign prevents diabetic ketoacidosis in children at their initial presentation with type 1 diabetes	Interventional using educational posters and postal cards	Children with the initial diagnosis of type I diabetes	Along with the awareness campaign for diabetes, the extent of diabetic ketoacidosis in the initial diagnosis of type I diabetes in children dropped by 64%. The duration of this awareness campaign was two years.
Tavousi <i>et al.</i> [26] 2017, Iran	Evaluation of the 'Healthy Citizen Campaign': A population-based survey in Tehran, Iran	Cross-sectional using billboards	1196 people living in Tehran	Billboards showing health messages were seen by 41.1% of the audience within a limited time. Another important result was the influence of the messages presented in the awareness campaign on 54% of the audience.
Morowatisharifabadi <i>et al.</i> [10] 2015, Iran	Assessing the effectiveness of cholera prevention campaign in students	Quasi-experimental using banners, pamphlets, playing films, and holding educational classes	High-school students	The levels of awareness, attitude, and behavior of people showed a growing trend after the awareness campaign. The duration of this campaign was four months.
Bahmani [27] 2021, Iran	Survey evaluation of HIV/AIDS prevention awareness campaign use of Kirkpatrick model	Cross-sectional using Kerrick-Patrick model	High school students	The awareness and behavior of students after the awareness campaign significantly improved by 51.6% and 25.6%, respectively. The duration of the awareness campaign was four months.

According to the reviewed studies, several information resources were used to implement campaigns, which mostly included social media, websites, and social networks.

In most studies reviewed in this research, the goal of campaigns was to increase the level of awareness and try to change positive behavior.

The duration of campaigns varied depending on the type of study and the purpose of the study.

Overall, the reviewed studies indicated that awareness campaigns can be effective in promoting disease prevention and improving clinical practice and education. However, the effectiveness of these campaigns may vary depending on the specific disease and the characteristics of the target population.

The target population in the implementation of campaigns in different studies was different

according to the type and purpose of the study.

Discussion

In this review, the type and extent of interventions to evaluate the effectiveness of awareness campaigns for disease prevention as well as their applications were examined in Iran and worldwide. The present research was done to evaluate studies on the importance of awareness campaigns for disease prevention as a step to identify evidence-based interventions. Unfortunately, in spite of extensive evidence, there are still massive gaps in the application of these pieces of evidence for health promotion and disease prevention. There are a few studies on interventions used by awareness campaigns for disease prevention. Accordingly, in this research, the available studies were examined. Bidin *et al.* [12], Dombrowski *et al.* [24], and Flynn *et al.* [23] studied awareness campaigns about stroke and admitted that the awareness campaign can be significantly effective in the knowledge, attitude, and in many cases, behavior of the target group individuals. They regarded awareness campaigns as something useful, economical, and an investment for health. This is because the implementation of an awareness campaign in most cases has played a key role in rapid as well as emergency admission of patients and prevention of mortality caused by brain stroke.

Kennedy *et al.* [16], Hall *et al.* [20], and Ball *et al.* [13] studied the effect of awareness campaigns regarding cancers. They found that after holding the awareness campaign, the knowledge and attitude in the target group increased, and the extent of cancer diagnoses in the initial stages of the disease increased compared to pre-intervention. Also, a considerable rise was seen in the referral of patients suspected to have cancer to healthcare and diagnostic centers. In studies by Van Asbroeck *et al.* [15] and Alaqeel *et al.* [22] regarding the effect of an awareness campaign on psychoneurological diseases (dementia and epilepsy), the awareness campaign played an effective role in enhancing knowledge and awareness of people. The findings of the reviewed studies emphasize the important role of awareness campaigns in increasing people's awareness, attitude, and behavior. To confirm the results obtained from the reviewed research, Mengel *et al.*, who investigated the effect of awareness campaigns on the risks of alcohol consumption in women, pointed out the positive effects of awareness campaigns on increasing women's awareness [28]. In this regard, Randolph *et al.* examined 18 awareness campaigns held in different areas. They found that awareness campaigns were effective for awareness in 67% of cases, attitude in 24% of cases, and individual behavior in 89% of cases [29]. Similar findings are frequently observed. These mass media campaigns were successful in delivering the

campaign message and increasing awareness on the respective topic [30-33].

Nevertheless, Mellon *et al.* Reported limited efficiency of an awareness campaign for patients applying for healthcare services with stroke symptoms [9]. Based on the review study by Freimuth about the effect of an awareness campaign on individual behavior, 20 cases of awareness campaigns were successful and nine were unsuccessful [34].

Bonet *et al.* [18] and Morowatisharifabad *et al.* [10] assessed infectious diseases (congenital sepsis and cholera) and indicated that awareness campaigns had positive and significant effects on preventing infectious diseases. Also, McFarlane *et al.* [21] and Bahmani *et al.* [27] evaluated the effect of implementing an awareness campaign on sexually transmitted diseases and AIDS and revealed that the implementation of awareness campaigns led to enhanced health-promoting behaviors in this regard, especially in young adults and teenagers. In other studies with different subjects, such as the effect of awareness campaigns on preventing drug-induced headaches [17], diabetes [25], chronic kidney disease [14], and cardiac arrest [19], and those assessing healthy people [26], the effectiveness of organizing awareness campaigns has been reported. According to our results, after the implementation of awareness campaigns, the promotion and improvement of the health behavior of the participants were observed. In similar studies on awareness campaigns aimed at increasing physical activity, out of 15 reviewed studies, seven studies showed a significant increase in behavior improvement [35-39].

The duration of awareness campaigns may be either short or long [40]. In the studies examined in this paper, the shortest time was related to the study by Bonet *et al.* as seven days, while the longest was related to the study by Nehme *et al.* as ten years [18, 19]. Regarding the method of organizing the awareness campaigns in the examined studies, in some studies, only one method was used, such as the study by Tavousi *et al.* [26], in which advertisement billboards were used, while in some others, several methods or a combination of methods were employed, such as the study by Morowatisharifabad *et al.* [10]. In designing and implementing awareness campaigns, essentially the probability of success increases when using multiple methods and interventions [40]. Elder *et al.* concluded that the effectiveness of an intervention performed by combining several channels in the long run would be greater than other interventions [41].

Conclusion

The findings of this study have important implications for public health policy and clinical practice. According to the results, we can emphasize the important role of awareness campaigns

in increasing awareness and improving people's behavior in various educational and information interventions. It is important that health policymakers pay more attention to awareness campaigns in various fields, which can prevent, control, and reduce the incidence of diseases and improve health behaviors. Therefore, healthcare providers and educators should consider implementing targeted awareness campaigns to promote disease prevention and improve patient outcomes. Future research could further investigate the effectiveness of these campaigns in different populations and settings.

Author's contributions: Data collection and writing the original draft: Sayran Nili, Shokofeh Doostvandi, and Seyedeh Gissia Fakhrelkoneini; Writing, review, and editing: Afshin Bahmani.

Conflict of interest: The authors declared that there is no conflict of interests regarding the publication of this paper.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or nonprofit sectors.

Ethical Considerations: This research was approved by the research deputy of Kurdistan University of Medical Sciences with the ethics code IR.MUK.REC.1401.184.

References

- Holland WW, Stewart S. Screening in disease prevention: What works?. Florida: CRC Press; 2007.
- Brenner H, Chen C. The colorectal cancer epidemic: Challenges and opportunities for primary, secondary and tertiary prevention. *Br J Cancer*. 2018;119(7):785-92.
- Rassi A, Dias JC, Marin-Neto JA. Challenges and opportunities for primary, secondary, and tertiary prevention of Chagas' disease. *Heart*. 2009;95(7):524-34.
- Sirois FM, Kitner R, Hirsch JK. Self-compassion, affect, and health-promoting behaviors. *Health Psychol*. 2015;34(6):661-9.
- Tavousi M, Mehrizi AA, Sadighi J, Alizadeh E, Kermani RM, Anbari M, et al. Evaluation of the healthy citizen campaign: A population-based survey in Tehran, Iran. *Payesh*. 2017;16(1):109-16. [Persian]
- Bakhtari Aghdam F, Sadeghi-Bazargani H, Azami-Aghdash S, Esmaeili A, Panahi H, Khazaei-Pool M, et al. Developing a national road traffic safety education program in Iran. *BMC Public Health*. 2020;20:1-3.
- Seymour J. The impact of public health awareness campaigns on the awareness and quality of palliative care. *J Palliat Med*. 2018;21(S1):S30-6.
- Cofie P, De Allegri M, Kouyate B, Sauerborn R. Effects of information, education, and communication campaign on a community-based health insurance scheme in Burkina Faso. *Global Health Action*. 2013;6:20791.
- Mellon L, Hickey A, Doyle F, Dolan E, Williams D. Can a media campaign change health service use in a population with stroke symptoms? Examination of the first Irish stroke awareness campaign. *Emerg Med J*. 2014;31(7):536-40.
- Morowatisharifabad MA, Bahmani A, Ahmadian F, Vatankhah M, Gharib A. Assessing the effectiveness of cholera prevention campaign in students. *J Nurs Educ*. 2015;3(4):11-8. [Persian]
- Miyamatsu N, Okamura T, Nakayama H, Toyoda K, Suzuki K, Toyota A, et al. Public awareness of early symptoms of stroke and information sources about stroke among the general Japanese population: The Acquisition of Stroke Knowledge Study. *Cerebrovasc Dis*. 2013;35(3):241-9.
- Bidin MZ, Loh WC, Baharin J, Rashid AM, Ibrahim A, Hoo FK, et al. The effectiveness of stroke awareness campaign in promoting knowledge on stroke among the public in Malaysia. Preprint. 2022.
- Ball S, Hyde C, Hamilton W, Bright CJ, Gildea C, Wong KF, et al. An evaluation of a national mass media campaign to raise public awareness of possible lung cancer symptoms in England in 2016 and 2017. *Br J Cancer*. 2022;126(2):187-95.
- Chin HJ, Ahn JM, Na KY, Chae DW, Lee TW, Heo NJ, et al. The effect of the world kidney day campaign on the awareness of chronic kidney disease and the status of risk factors for cardiovascular disease and renal progression. *Nephrol Dial Transplant*. 2010;25(2):413-9.
- Van Asbroeck S, van Boxtel MP, Steyaert J, Köhler S, Heger I, de Vugt M, et al. Increasing knowledge on dementia risk reduction in the general population: Results of a public awareness campaign. *Prev Med*. 2021;147:106522.
- Kennedy MP, Cheyne L, Darby M, Plant P, Milton R, Robson JM, et al. Lung cancer stage-shift following a symptom awareness campaign. *Thorax*. 2018;73(12):1128-36.
- Carlsen LN, Westergaard ML, Bisgaard M, Schytz JB, Jensen RH. National awareness campaign to prevent medication-overuse headache in Denmark. *Cephalalgia*. 2018;38(7):1316-25.
- Bonet M, Souza JP, Abalos E, Fawole B, Knight M, Kouanda S, et al. The global maternal sepsis study and awareness campaign (GLOSS): Study protocol. *Reprod Health*. 2018;15(1):16.
- Nehme Z, Andrew E, Bernard S, Patsamanis H, Cameron P, Bray JE, et al. Impact of a public awareness campaign on out-of-hospital cardiac arrest incidence and mortality rates. *Eur Heart J*. 2017;38(21):1666-73.
- Hall SJ, Peacock JD, Cochrane LA, Peacock O, Tierney GM, Tou SI, et al. The bowel cancer awareness campaign 'Be Clear on Cancer': Sustained increased pressure on resources and over-accessed by higher social grades with no increase in cancer detected. *Colorectal Dis*. 2016;18(2):195-9.
- McFarlane M, Brookmeyer K, Friedman A, Habel M, Kachur R, Hogben M. GYT: Get yourself tested campaign awareness: Associations with sexually transmitted disease/HIV testing and communication behaviors among youth. *Sex Transm Dis*. 2015;42(11):619-24.
- Alaqael A, Kamalmaz H, Abou Al-Shaar H, AlZahrani I, Alaqael A, Aljetaily S, et al. Evaluating the initial impact of the riyadh epilepsy awareness campaign. *Epilepsy Behav*. 2015;52(A):251-5.
- Flynn D, Ford GA, Rodgers H, Price C, Steen N, Thomson RG. A time series evaluation of the FAST national stroke awareness campaign in England. *PLoS One*. 2014;9(8):e104289.
- Dombrowski SU, Mackintosh JE, Sniehotta FF, Araujo-Soares V, Rodgers H, Thomson RG, et al. The impact of the UK 'Act FAST' stroke awareness campaign: Content analysis of patients, witness and primary care clinicians' perceptions. *BMC Public Health*. 2013;13:915.
- King BR, Howard NJ, Verge CF, Jack MM, Govind N,

- Jameson K, et al. A diabetes awareness campaign prevents diabetic ketoacidosis in children at their initial presentation with type 1 diabetes. *Pediatr Diabetes*. 2012;13(8):647-51.
- 26- Tavousi M, Mehrizi AA, Sadighi J, Alizadeh E, Kermani RM, Anbari M, et al. Evaluation of the 'Healthy Citizen Campaign': A population-based survey in Tehran, Iran. *Payesh (Health Monitor)*. 2017;16(1):109-16. [Persian]
- 27- Bahmani A. Survey evaluation of HIV/AIDS prevention awareness campaign use of Kirkpatrick model. *Iran Red Crescent Med J*. 2021;23(11). [Persian]
- 28- Mengel MB, Ullione M, Wedding D, Jones ET. Increasing FASD knowledge by a targeted media campaign: Outcome determined by message frequency. *Medicine*. 2005;3-13.
- 29- Randolph KA, Whitaker P, Arellano A. The unique effects of environmental strategies in health promotion campaigns: A review. *Eval Program Plann*. 2012;35(3):344-53.
- 30- Bell AC, Wolfenden L, Sutherland R, Coggan L, Young K, Fitzgerald M, et al. Harnessing the power of advertising to prevent childhood obesity. *Int J Behav Nutr Phys Act*. 2013;10:114.
- 31- Christensen ASP, Meyer MKH, Dalum P, Krarup AF. Can a mass media campaign raise awareness of alcohol as a risk factor for cancer and public support for alcohol related policies?. *Prev Med*. 2019;126:105722.
- 32- Martin N, Buykx P, Shevills C, Sullivan C, Clark L, Newbury-Birch D. Population level effects of a mass media alcohol and breast cancer campaign: A cross-sectional pre-intervention and post-intervention evaluation. *Alcohol Alcohol*. 2018;53(1):31-8.
- 33- Orr N, Milat AJ, Lin M, Neville L, Develin L. Evaluation of the 2008 NSW water campaign. *Health Promot J Austr*. 2010;21(2):114-9.
- 34- Freimuth VS, Taylor MK. Are mass mediated health campaigns effective? A review of the empirical evidence. National Heart, Lung and Blood Institute. 1995.
- 35- CockerKA De, Bourdeaudhuij IM, Brown WJ, Cardon GM. Effects of "10,000 steps Ghent'a whole community Intervention. *Am Journal Prev Med* 2007;33:455-63.
- 36- Reger B, Bauman A, Butterfield S, Cooper L, Smith H, Chey T, et al. Wheeling walks evaluation of a media-based community intervention. *Farm Commen Health* 2005;28(1):64-78.
- 37- Merom D, Miller Y, Lymer S, Bauman A. Effect of Australia's walk to work day campaign on adults'active commuting and physical activity behavior. *Am J Health Promot* 2005;19(3):159-62.
- 38- Matsudo V, Matsudo S, Araujo T, Andrade DR, Oliveira LC, Hallal PC, et al. Time trends in physical activity in the state of Sao Paulo,Brazil. *Med Sci Sports Exerc*. 2010;42(12):2231-6.
- 39- Wray R, Jupka K, Ludwig B. A community-wide media campaign to promote walking in a Missouri town. *Prevention Chronic Dis*. 2005;2(4):A04.
- 40- Kotler P, Armstrong GM. Principles of marketing. London: Pearson Education; 2010.
- 41- Elder RW, Shults RA, Sleet DA, Nichols JL, Thompson RS, Rajab W. Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: A systematic review. *Am J Prev Med*. 2004;27(1):57-65.