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Health promotion at the beach: lessons learned from the "safe beaches" education project

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Abstract

Background. During summer, beach authorities are charged with ensuring the safety of beach visitors, which includes promoting safe behaviour via educational efforts. The purpose of this study was to describe the processes of development and implementation of a promotional project for beach safety.

Methods. A multidisciplinary task force developed the informational material and the content to be provided following the principles of the Health Belief Model (HBM). The health promotion addressed a wide range of topics and was delivered at 65 bathing facilities along the Lazio coast (Central Italy) from June 2, 2023, to September 10, 2023. To evaluate the feedback of the promotion activities, the attendees were asked to answer a post-event self-evaluation survey.

Results. 1,032 people responded to the questionnaire about satisfaction and utility levels. Participants' overall satisfaction scores (98% rated "excellent" or "good") and utility (88%) were high, with higher satisfaction levels for the women, those with higher education, and Italian citizens. Most participants reported that the material was easy to understand; the contents were comprehensive; and the healthcare professionals were prepared, engaging, and available.

Conclusions. This project showed that approaching the summer visitors in the place time is a feasible and well-accepted strategy for summer health-related education.

Key words

- beach safety
- health promotion
- community health
- health education

INTRODUCTION

During the summer, beaches can face various challenges and problems, often related to the increased number of visitors and environmental factors [1]. Some of the most frequent problems at beaches include safety concerns like drownings, beach accidents (contact with jellyfish/weever fish, heat stroke), and water-related incidents [2]. Beach accidents and water-related incidents represent a major public health problem associated with significant personal, societal and economic costs [2, 3].

The beaches on the Lazio coast in Central Italy are tourist-oriented and residential with a population that significantly increases during the summer months. Sunbathing on the Lazio beaches is one of the main attractions for Italian and foreign tourists, mainly because of the beaches' closeness to Rome.

International visitors are often considered to be an "at risk" group at beaches due to their unfamiliarity with the environment and associated hazards, and a lack of attention to safety details as part of being on holiday [3, 4].

Lifeguard services may be strained during peak times, and efforts by local authorities and community organisations are essential to address and mitigate summer beach-related concerns. To prevent and decrease the risks associated with environmental hazards on the beaches and health conditions related to these risks, it is crucial to focus on raising awareness about water safety and to provide helpful information to ensure the well-being of beach visitors. Health promotion programmes are initiatives designed to improve the health and well-being of individuals and communities by enabling people to take control of their health and

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its determinants. They should include a settings-based approach to promote health in specific settings (e.g., schools, workplaces, residential areas, markets) [5] to address priority health problems by taking into account the places where people live and work [6].

The "safe beaches" education project has embraced this vision by creating an action plan based on communities' health problems and needs and offering programmes and education to meet them.

The main aim of the project was to heighten health awareness and changes in attitudes and beliefs on beach safety or beach accident prevention. The theoretical basis of the project was built on the Health Belief Model (HBM) [7], a framework created to explain the lack of participation in public health service programmes. According to the HBM, an individual makes behavioural changes based on their perception of the severity of the potential illness, susceptibility to the illness, benefits of changing their behaviour to prevent or reduce the effect of the illness, and obstacles to the recommended behavioural change [8].

The project was launched as a pilot project by one healthcare organisation in 2022 to test its feasibility [9]; after this, the same project was launched by three healthcare organisations coordinated by the Board of Nurses of Rome (Ordine Professioni Infermieristiche, OPI) with the patronage of the Lazio Region.

The purpose of this study was to describe the processes of development and implementation of the project and to evaluate the achievements of the programme in terms of project's activities and services (process evaluation) and programme results (outcome evaluation).

METHODS

The "safe beaches" promotion programme

Theoretical basis of the project

The rationale for the efficacy of the project relies on the HBM [7] according to which the desired behavioural change is positively influenced by enabling people to understand the potential benefits of reducing some health hazards and by empowering them to implement behavioural changes. The combination of specific outreach (identifying hazards at the beaches), education, and empowerment (simulation) was believed to be essential to the programme's success [10]. For example, regarding tanning, the HBM suggests that individuals will engage in sun protection (e.g., wear sunscreen) if they perceive themselves to be vulnerable (due to family cancer history and skin type) to a severe health threat (skin cancer) and believe that the benefits associated with engaging in the protective behaviour (diminishing risk for skin cancer) outweigh the costs (money spent on sunscreen).

Following the model, the efforts to develop the educational materials and information provided were directed towards influencing individual health behaviours by addressing various psychological factors, as follows:

- perceived susceptibility: informational materials include data, statistics, and scenarios that emphasise the likelihood of individuals being at risk (e.g., for heat exhaustion and heat stroke). The materials help users recognise their personal vulnerability;
- perceived severity: the content and the provided information highlights the serious consequences of not addressing the health issue (e.g., for heat exhaustion: confusion, altered mental status, loss of consciousness) and includes testimonials that make the threat of the condition more tangible;
- perceived benefits: the materials present clear, actionable steps and explain how taking preventive measures or seeking treatment could improve health outcomes (e.g., for heat exhaustion: explaining the benefits of drinking plenty of water and wearing loose fitting, lightweight clothing);
- perceived barriers: the contents address and alleviate common barriers/perceptions (e.g., for heat exhaustion: the amount of sun exposure to obtain a perfect tan) and provide solutions, alternatives, and encouragement to reduce these barriers (e.g., phototypes, UV index).

For further details, the topics addressed in the educational sessions, structured around the factors of the Health Belief Model, are *available online as Supplementary Materials (Appendix A)*. The developed materials can be accessed at the following link: https://opi.roma.it/spiagge-serene-2023/.

Development

The project committee planned and coordinated the health promotion programme, determining the specific health issues that require attention to improve safety at beaches. Since the health promotion programmes should be synergistic and cannot be effectively addressed through interventions focused on a single lifestyle [11], a multidisciplinary task force composed of nurses, midwives, dieticians, physiotherapists, and social workers was instituted. The health promotion programme was based on a wide range of topics, such as healthy dietary habits, beach hazards, water safety, sun safety awareness, breastfeeding and women's personal hygiene at the beach (e.g., menstrual hygiene), and physical activity, while first aid and emergency response were demonstrated through basic life support defibrillation (BLSD) and drowning simulations. These simulations were performed by well-trained personnel who demonstrated the proper management of beach emergencies. The task force developed the informational material (brochures, booklets, posters, etc.) intending to integrate and complement the proposed topics while appealingly presenting them and following the principles of the HBM. The combination of specific outreach (identifying beach hazards in participants' personal experience), education, and empowerment (providing skill through simulations) was believed to be essential to program success.

Implementation

The committee planned programme activities, scheduling places, dates, and timetables. It also determined the modalities of the programme, identified the resources, and invited public and not-for-profit community organisations and voluntary healthcare providers. In order to gather as many beachgoers as possible, the "safe beaches" project was publicised extensively through

various sources: websites, social media, interviews, and posters put up throughout the beaches. The "safe beaches" project was held at 48 bathing facilities along the Lazio coast between 10 am and 6 pm from June 2, 2023, to September 10, 2023. The timetable is available from: https://opi.roma.it/spiagge-serene-2023/.

During the activity days, a multidisciplinary team provided health promotion interventions using the informational material. The team walked along the beaches interacting with beachgoers both through direct one-to-one communication and at the users' beach resorts, talking to groups of a maximum of five people. The content of each educational session consisted of a minimum 15-minute session based on the topic on which the beachgoers declared they were most interested. Indeed, given the multidisciplinary nature of the educational project, which encompasses a wide range of topics, it was impractical to address all subjects within a single session. Consequently, participants were consulted to identify the topics of greatest interest, forming the basis of the educational session.

During the educational session beach goers were asked about their health beliefs on the chosen topic as follows:

- perceived susceptibility (how likely do you think you are to experience [health issue]?);
- perceived severity (how serious do you believe the consequences of [health issue] are?);
- perceived benefits (what do you think are the benefits of taking [health action]?);
- perceived barriers (what factors might prevent you from taking [health action]?).

Then, based on the beachgoers' responses and the arguments outlined in *Appendix A available online as Supplementary Materials*, the healthcare providers enhanced participants' knowledge about beach health and safety and provided guidance on how to modify their behaviours accordingly.

Furthermore, beach visitors were invited to the BLSD stations, where instructors offered cardio-pulmonary resuscitation simulations using a semi-automatic defibrillator and demonstrated what to do in the case of a drowning situation. As part of the drowning simulation program, prepared instructors collaborated with trained rescue dogs to demonstrate water rescue techniques. This initiative was specifically designed to enhance the program's appeal to beachgoers, making it both educational and engaging. Specifically, all the drowning simulations were based on the following actions designed to enhance safety during summer beach outings mainly points:

- teach children and inexperienced swimmers to stay in designated swimming areas marked by safety flags;
- check beach safety warnings, weather conditions, and tide schedules before visiting;
- observe and adhere to posted signs about dangerous areas, such as sudden drop-offs or strong currents;
- avoid swimming during adverse weather conditions or when red or double red safety flags are displayed;
- provide life jackets for children, non-swimmers, and those engaging in water sports;
- use floating devices cautiously, as they can drift into deeper waters or strong currents;
- avoid alcohol consumption while swimming or supervising swimmers;
- never swim alone; use the buddy system to monitor each other's safety;
- act quickly if someone shows signs of distress: signal for help and avoid putting yourself at risk;
- reach or throw lifesaving equipment to the person in need, but do not enter the water unless trained to perform rescues;
- perform cardiopulmonary resuscitation (CPR) immediately if a drowning victim is unresponsive after being pulled from the water.

By combining these proactive measures with a commitment to safety and awareness, beachgoers can significantly reduce the risk of drowning and enjoy a safer summer at the beach.

Evaluation

Study population

To evaluate the feedback of the "safe beaches" promotion activities, the attendees were asked to answer a post-event self-evaluation survey by scanning a QR code printed on the materials distributed. Everyone who had participated in the activities or received health information on the beach could respond. Before answering, they provided written informed consent.

Measures

The research team collected responses between June 2023 and September 2023. The survey consisted of 14 questions and was designed with a focus on two main domains: the satisfaction and the utility perceived.

In the survey, respondents were asked to provide: (i) a Likert scale rating for satisfaction; (ii) a Likert scale rating for utility; and (iii) any additional suggestions or comments in an open text box. The survey also included two questions on respondents' general impressions and included space for suggested improvements.

Statistical analysis

Data were collected and analysed by researchers involved in the project.

To describe and compare the study participants' characteristics, frequencies, means, and standard deviations were calculated. A chi-square test of independence was performed to examine the association between gender (male, female), education level (primary, secondary, high, university), and nationality (Italian, other), with responses to the questions related to the satisfaction and utility of the project. The assumptions of the chi-square test were checked, ensuring that all expected cell frequencies were ≥5. Statistics were analysed using SPSS version 23.

The data were presented alongside qualitative comments and suggestions.

RESULTS

The healthcare professionals provided the health education intervention to increase the participants' knowledge and behaviours related to beach safety. With respect to the coverage of the "safe beaches" project, during the three months of "safe beaches" activities (be-

tween June 2023 and September 2023), 1,032 people responded to the questionnaire about satisfaction and utility levels.

Approximately 10,000 brochures were distributed during the educational sessions. The themes chosen most by beachgoers were on first aid, nutrition and feeding, and the impact of sun exposure on bone health. As for the general characteristics of participants, the mean age of respondents was 42.7 (±SD16) years, the majority (64.3%) of the respondents were female, and around 48% had a university degree. Non-Italian citizens accounted for 6.9% of the sample.

Socio-demographic characteristics of the participants are summarized in *Table 1*.

Programme delivery and result evaluation

Overall, most participants were very satisfied with the educational project. On a 4-point scale, 98% of the participants rated the programme as "excellent" or "good", and almost 100% responded that they would recommend participation in the programme to their friends. Specifically, a majority of participants perceived that things learned during the programme were useful and practical (88%); the material was easy to understand (90%); the contents were clear (89%) and comprehensive (86%); and the healthcare professionals were prepared (90%), engaging (90%), and available (92%) (*Table 2*). Approximately 85% responded that the programme was organised well overall and was run smoothly. However, the least positive experiences were reported with regard to accessibility, dissemination, and the effectiveness of publicity; indeed, 61% of the visitors were at the beach by chance, without having had the opportunity to plan their involvement in advance. The results summarized in *Table 3* indicate that women generally exhibit a higher level of satisfaction than men (X^2=16.1, p=0.013), individuals with higher education tend to be more satisfied with the program (X^2=21.9, p=0.009), and Italians report greater satisfaction compared to foreigners (X^2=10.5, p=0.015). The evaluation score related to utility was higher for younger participants (X^2=20.2, p=0.043) than for older ones (*Table 4*).

Table 1
General characteristics of the of Post-Event Survey Participants (n=1,032)

Variables		Frequency (%)
Gender	Male	353 (34.2)
	Female	664 (64.3)
	Missing	15 (1.4)
Age	Mean (SD)	42.7 (16)
Education	Primary	13 (1.3)
	Secondary	88 (8.5)
	High school	440 (42.6)
	University	491 (47.6)
Citizenship	Italy	831 (80.5)
	Foreign	71 (6.9)
	Missing	130 (12)
How people find out about the programme	Internet, e-mail	31 (3)
	On-site participation	638 (61)
	Institutional announcement	66 (6.4)
	Social media	62 (6)
	Word of mouth	127 (12)
	Others	108 (10)
Frequency of visits to the beaches	Almost never	41 (4)
	<1 month	364 (35)
	1< months <3	366 (35)
	3< months <6	261 (25)

SD: standard deviation.

Participants' free comments

Many respondents suggested desired activities/services in future programmes (n=20), made general suggestions (n=10), and wrote free comments (n=3). Respondents suggested several improvements for future health programmes, including more extensive promotion of the programme, sufficient time for health simulation, extension to other social meeting places, and sustained health programmes regularly over the year rather than as one-time summer events. As for future desired activities/services, various topics were suggested, including what lifeguards do and how they can help people, what to do in case of drowning, and what constitutes inappropriate beach behaviour, with a section on respecting the beach, yourself, and others.

DISCUSSION

The results demonstrated that the "safe beaches" programme effectively provided opportunities for beach visitors to access health information and available health services and resources as well as to improve knowledge, skills, and self-confidence. The educational interventions provided by the healthcare providers allowed participants to learn how to prevent or reduce the risk of an adverse outcome at the beaches, obtain skills on first aid and emergency response, and increase their knowledge on a variety of summer-related issues.

This programme demonstrated the feasibility of delivering health promotion programmes at beaches that represent unique settings for families' health promotion and positive environments that empower and encourage healthy behaviours [12]. Indeed, natural environments are increasingly being considered key settings for health promotion [13, 14]. The efforts to promote beach visitors' health can also positively affect the health of the overall community. As beach visitors are expected to be engaged in the wider world (e.g., with family, the elderly, and vulnerable people), their health promotion will disseminate health messages and resources to the less-connected sectors of society. Furthermore, beach visits are often undertaken by groups of people rather than by individuals, indicating a social dimension to visits during which health promotion can be spread.

Table 2
Participants' level of satisfaction with the "safe beaches" project

Overall, how satisfied were you with the educational project?				
Very satisfied	841 (81)			
Satisfied	181 (17)			
Neither satisfied nor dissatisfied	8 (0.8)			
Dissatisfied	2 (0.2)			
How do you rate the usefulness of the project?				
Excellent	514 (49)			
Good	409 (39)			
Sufficient	103 (10)			
Insufficient	6 (0.6)			
How do you rate the clarity, completeness, and understanding of the informational material?				
	Clarity	**Completeness**	**Understanding**	
Excellent	530 (51)	484 (46)	531 (51)	
Good	394 (28)	420 (40)	400 (39)	
Sufficient	103 (10)	122 (12)	97 (9.4)	
Insufficient	3 (0.3)	6 (0.6)	4 (0.4)	
How do you rate the professionalism, availability, preparation, and involvement of the operators?				
	Professionalism	**Availability**	**Preparation**	**Involvement**
Excellent	588 (57)	600 (58)	594 (57)	587 (56)
Good	360 (34)	353 (34)	356 (34)	355 (34)
Sufficient	80 (7.8)	74 (7.2)	78 (7.6)	83 (8)
Insufficient	4 (0.4)	5 (0.5)	4 (0.4)	7 (0.7)
How do you rate the structure and organization of the educational sessions?				
Excellent	557 (54)			
Good	319 (31)			
Sufficient	150 (15)			
Insufficient	6 (0.6)			
Would you recommend participation in the project to relatives/friends?				
YES	1,029 (99.7)			
NO	3 (0.3)			

Table 3
Demographics of Post-Event Survey Participants and percentage of satisfaction in brackets

		N (%)				X^2 (p value)
		Dissatisfied	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**	
Education	Elementary	0	0	2 (15.4)	11 (84.4)	
	Secondary	0	2 (0.4)	21 (23.9)	65 (73.9)	
	High school	1 (0.2)	4 (0.9)	97 (22)	338 (76.8)	
	University	1 (0.2)	2 (0.4)	61 (12.4)	427 (87)	**21.9 (0.009)**
Gender	Female	0	4 (0.6)	108 (16.3)	552 (83.1)	
	Male	1 (0.3)	12 (3.4)	69 (19.5)	271 (76.8)	**16.1 (0.013)**
Citizenship	Italy	2 (0.2)	5 (0.6)	134 (16.1)	690 (83)	
	Foreign	0	0	22 (31)	49 (69)	**10.5 (p=0.015)**
Age	<15	0	1 (4.3)	7 (30.4)	15 (65.2)	
	16-26	1 (0.5)	2 (1.1)	41 (21.9)	143 (76.5)	
	27-37	0	0	33 (16.9)	162 (83.1)	
	38-48	0	2 (1)	20 (10.1)	177 (88.9)	
	49-59	1	2 (0.8)	48 (19)	201 (79.8)	
	60-70	0	0	26 (17.6)	122 (82.4)	
	>70	0	1 (3.6)	6 (21.4)	21 (75)	26.6 (0.08)
Frequency of visits to the beaches	Almost never	0	0	12 (29.3)	29 (70.7)	
	<1 month	0	2 (0.5)	67 (18.4)	295 (81)	
	1< months <3	1 (0.3)	4 (1.1)	70 (19.1)	291 (79.5)	
	>3 months	1 (0.4)	2 (0.8)	32 (12.3)	226 (86.6)	12.06 (0.21)

N: number; X^2: chi-square test; in bold: statistically significant results.

Table 4
Demographics of attendees at 'safe beaches' program and evaluation of usefulness in numbers and percentages

		N (%)				X^2 (p value)
		Insufficent	Sufficent	Good	Excellent	
Education	Elementary	0	3 (23.1)	2 (15.4)	8 (61.5)	
	Secondary	1 (1.1)	7 (8)	33 (37.5)	48 (54.4)	
	High school	2 (0.4)	50 (11.5)	185 (42.6)	199 (45.9)	
	University	3 (0.6)	43 (8.8)	189 (38.5)	259 (52.7)	
Gender	Female	2 (0.3)	66 (10)	273 (41.2)	324 (48.9)	
	Male	3 (0.8)	31 (8.9)	133 (38.1)	185 (53)	10.4 (0.12)
Citizenship	Italy	2 (0.2)	89 (10.7)	334 (40.3)	405 (48.9)	
	Foreign	3 (0.3)	7 (10.1)	28 (40.6)	34 (49.3)	0.24 (0.98)
Age	<15		2 (9.1)	10 (45.5)	10 (45.5)	
	16-26	1 (0.1)	19 (10.2)	82 (44.1)	85 (45.7)	
	27-37	3 (1.5)	8 (4,1)	77(39.7)	109 (56.2)	
	38-48	2 (1)	18 (9)	81 (40.7)	100 (50.3)	
	49-59	0	36 (14.3)	102 (40.6)	113 (45)	
	60-70	0	16 (11)	48 (32.9)	82 (56.2)	
	>70	0	4 (14.3)	9 (32.1)	15 (53.6)	**20.2 (0.043)**
Frequency of visits to the beaches	Almost never	1 (0.3)	7 (18.4)	15 (39.5)	16 (42.1)	
	<1 month	3 (0.8)	38 (10.4)	148 (40.7)	178 (48.9)	
	1< months < 3	2 (0.5)	37 (10.1)	143 (39.2)	185 (50.7)	
	>3 months	0	21 (8.1)	103 (39.8)	135 (52.1)	4.6 (0.54)

N: number; X^2: chi-square test; in bold: statistically significant results.

Participants positively evaluated most of the processes of the programme activities and services, while some improvements will be needed in the areas of accessibility, dissemination, and the effectiveness of the publicity. With respect to satisfaction, from this study it emerged that satisfaction was significantly higher for women, for those with higher education, and for Italian citizens. It is reasonable to think that the topics covered by the programme (e.g., healthy dietary habits, sun safety awareness, breastfeeding and women's personal hygiene at the beach, physical activity) are of greater interest to women. Moreover, it is well recognised that the more educated people are, the more they appreciate the health promotion programme; this is quite challenging, as it is those who are less educated who most need to be involved in such initiatives.

Healthcare providers are called on to take into account the specific needs of the less-educated population [15]; as with mental health issues, specialist skills and specific care pathways for the involvement of the less-educated population and non-Italian citizens should be enhanced by investing in dedicated training and staff. It could be useful to increase the availability of cultural mediators and the use of multilingual materials as key strategic actions to reaching out to foreign beach visitors [16]. The participants highly valued the multi-professional and intersectoral debate of the project, and the high level of utility and satisfaction confirmed the importance of developing interventions and programmes within a common framework [7, 8, 10] to help guide future actions.

The utility of the project was perceived as higher by the younger participants; this is of particular importance as younger people are regular beach users who are knowledgeable and mostly aware of beach-related hazards and risks but often do not make the safest decisions [17]. Moreover, the WHO pointed out that people aged 5-14 years are more exposed to unintentional injury at beaches than those of other ages [18].

We hope that attending the "safe beaches" health promotion programme [10] based on the HBM framework [8, 19] increased the participants' ability to perceive the benefits of positive behaviour and to discourage harmful behaviour as well as driving behavioural change.

Limitations

Various limitations of the project should be noted.

First, the relationship between the programme and behavioural changes was not addressed, as we only reported the level of satisfaction and utility of the project without investigating the impact (e.g., behavioural changes, reduction in incidents at the beaches). In practice, however, no single evaluation is likely to address all dimensions of health promotion programmes; indeed, the effectiveness of such activities remains weak or inconsistent effects have been reported [20].

Second, we used convenience sampling and not a representative sample of all the participants. Obtaining a representative sample in a public health programme is a major challenge because those programmes are usually held as open-ended and unstructured events in a public space with many people coming and going. Since our participants were similar concerning geography (citizens and city of residence), the results may not be generalizable to other communities.

Third, as the survey was conducted during the programme, we cannot be sure the participants' reported perceptions will be sustained in the long term.

CONCLUSIONS

This project has clearly shown that approaching the summer visitors in the place where they spend their free time is a feasible and well-accepted strategy for summer health-related education, including cardio-pulmonary resuscitation simulations to use in cases of drownings. The lessons learned from this project are particularly important as the results demonstrated the utility and satisfaction related to a health promotion project design on the HBM that addressed the key beliefs capable of influencing health-related behaviours in an open-ended setting such as beaches. We believe our results would be useful for sharing information on the planning and implementing of future beach health promotion programmes.

We claim that although health promotion programmes have become very popular in recent years, their successful implementation remains weak, and evaluation suffers from a shortage of evidence. Further efforts are needed to develop a balanced programme of monitoring, process evaluation, and outcome evaluation to understand which health activities are successful and why.

Conflict of interest statement

The Authors declare that there are no conflicts of interest.

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