

Nutrition and Physical Activity Communication in the 21st Century: Challenges and Opportunities

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Received: September 01, 2017; **Published:** October 04, 2017

Abstract

Statement of the Problem: The current information environment around nutrition and physical activity is complex and often confusing to the public. Similarly, social determinants may mediate nutrition communication effects. The purpose of this study is to explore the most effective and trustful communication channels to the public about the evolving understanding of the relationship between nutrition, lifestyle and optimal health in Lebanon.

Methodology and Theoretical Orientation: A formative exploratory study was conducted to explore the most effective nutrition communication channels as perceived by a heterogeneous Lebanese sample (67 adults, 48 youth). An exhaustive integrated conceptual framework based on social marketing approach and mixing related theories and models was used in this study. Directed and semi-structured individual interviews and focus groups were conducted. Collected data have been submitted to a thematic qualitative analysis.

Findings: Knowledge alone cannot predict a healthy lifestyle especially among youth. A social marketing approach should be considered to succeed nutrition and physical activity messages. Success of various communication channels is subject to the influence of socio-demographic and cultural determinants, such as age, social class, social integration, geographical areas, and environmental support. Effective communication strategies should develop culturally relevant nutrition messages and delivery systems that take into account; the barriers to healthy lifestyles, the information sources, and the distinct population segments.

Conclusion and Significance: Comprehensive sociocultural-based nutrition communication strategies can help to successfully promote nutrition, physical activity and prevent diseases. Recommendations are made for effective communication strategies.

Keywords: *Nutrition; Physical Activity; Social Marketing; Culture; Communication Channels; Health Messages*

Abbreviations

T2D: Type 2 Diabetes; CVD: Cardiovascular Diseases; NGOs: Non-Governmental Organizations; WHO: World Health Organization; UN: United Nations; SNP: School Nutrition Policies; PA: Physical Activity

Introduction

In today's world and due to medical and pharmaceutical advances [1,2], societies are confronting with the fact that humans are living longer leading to an increase prevalence of chronic metabolic diseases including obesity, T2D, cancer and CVD [2-4]. Growing scientific evidence revealed genetic [3,4], individual and environmental factors that contribute to unhealthy choices and poor life quality, thus increasing the risk of metabolic diseases [4-6], and poor brain health such as cognitive decline and dementia [7,8]. Therefore, there is an intense interest in developing appropriate strategies at early ages to allow people not only to live longer but also to age healthily [2,9,10].

Childhood and adolescence constitute key entry points for interventions aiming to build healthy and active lifestyles over the life course, as evidence showed that dietary patterns “track” to adulthood [10]. Improving people’s diet and PA behaviors are important means of decreasing the risk of chronic metabolic diseases, promoting healthy ageing and increasing wellbeing [9,11].

Family units and the home environment were recognized to have the primary and greatest influence on child lifestyle habits and PA behaviors and hence served as targets for prevention and treatment of obesity during early ages [12-14]. Parents are therefore have been acknowledged as the key agents of change playing a role in development of healthy lifestyles [12,13].

Whilst published studies on youth obesity prevention showed successful strategies to include parents as agents of change and to provide them with resources to encourage lifestyle changes within the home, there is a need to adapt such interventions to family contexts and routines [13,15,16]. Future interventions must acknowledge other factors contributing to youth obesity, poor diets and sedentary lifestyles [12-17] such as personal factors (age, gender, knowledge, skills), social norms (heritage, lifestyle), environmental settings (home, school, neighborhoods) and sectors of influence (government, public health system, food and fashion industries, marketing) [5,12,15].

In the 21st century, the information environment around nutrition and PA is complex and often confusing to the public [18]. Every day, youth are receiving enormous number of nutrition and sports messages from all types of media, websites, schools, and in retail stores [18-20]. However, social determinants may mediate nutrition communication effects. For instance, food marketers influence consumers’ dietary behaviors and lifestyle choices by appealing to their daily psychological needs [18,21]. Therefore, gaining a better understanding of how food marketing affects youth’ food choices, preferences, and their diet patterns and health [19-20,22] will require examining how people behave with respect to nutrition and PA communication methods [17-23].

A considerable body of literature has emerged which has moved beyond traditional health communication process “*1-way top-down flow of information*” to explore the significance of more inclusive “*2-way interactive*” communication process as important strategic health communication design [12,18,24,25]. Formative research is essential to describe the multiple levels of influence on individuals’ lifestyles including food and activity choices. Besides, formative research illustrated the potential role of nutrition communication in the day-to-day practice of engagement and interaction with people in relation to food and PA risks and benefits [26,27].

During the past few years, Lebanon has been experiencing a nutritional transition in dietary behaviors and lifestyle patterns [28]. A distinctive feature of the nutrition transition, especially among Lebanese youth, was the switch from traditional Mediterranean diets (legumes, vegetables, fruits, home-made food) to western diets (more meat, energy dense products, convenient food) [28,29], and the adoption of sedentary lifestyle [29].

Henceforth, to counter the impending health effects on Lebanese population, especially among youth, urgent governmental leadership and global communication strategies are needed to more effectively intervene against major determinants such as excessive caloric intake, physical inactivity, and active promotion of food consumption by food industry, all of which exacerbate an already problematic obesogenic environment [15,16]. To the best of our knowledge, no previous scientific data in Lebanon had described the current state of the science concerning the role of consumer education, nutrition communication and marketing, commercial brand marketing, health literacy, and other forms of communication in affecting consumer knowledge and behavior with respect to nutrition, PA and other health matters.

The objective of this study was to explore the most effective and trustful communication channels to the public about the evolving understanding of the relationship between nutrition, lifestyle and optimal health in Lebanon.

Materials and Methods

Study Design

As social marketing is based on context research of people’s perceptions, beliefs and behaviors, it helps to determine individuals’

needs and to identify the best way of reaching target populations [30]. Therefore, social marketing approach is an important and powerful tool for designing public health nutrition programs such as nutrition and PA communication strategies [30]. Scientific evidence suggested that mixing conceptual theories and models within the social marketing approach is useful for understanding and explaining the dynamics and determinants of health behaviors [30,31]. A review of the literature on appropriate theoretical models used in a social marketing approach and encompassing the influential variables on community-based health promotion programs [30,32] helped in developing an exhaustive integrated conceptual framework [15] which, was employed to elaborate the questions of this study. This study is a selected section of a larger study exploring the perceptions of Lebanese key stakeholders to an eventual school nutrition policy (SNP) development in Lebanon [15]. Further information about the integrated conceptual framework is to be found in Hamadeh., *et al.* 2017 [15].

Moreover, qualitative formative research is essential at the start of any community research in order to understand the problem, the participants' perceptions and the overall situation [25]. More specifically, usage of "stakeholders' meetings/interviewing" as a type of formative research to collect information helps to identify key strategic health communication issues including sources of information, types of channels through which to deliver nutrition messages, etc [25]. Therefore, to frame the appropriate questions from which to derive reliable data and to measure the intensity of beliefs and certainty surrounding particular responses, a formative qualitative exploratory method was conducted in this research study to explore the most effective nutrition communication channels as perceived by a heterogeneous Lebanese sample.

Study Setting

To conduct a nutrition communication intervention based on social marketing approach, it is necessary to identify involved or potential key stakeholders in planning, developing and implementing such intervention [31,33]. Therefore, social marketing suggests targeting schools and communities including: 1) individuals having some "leadership" in their environment; 2) networks promoting support for health programs; and 3) coordinating agencies to maintain nutrition and health programs [32,33].

Participants in the current study (n = 115) were enrolled from schools and different Lebanese communities in 2 geographical areas in Lebanon including the capital Beirut "urban region" and the Mount Lebanon "semi-rural area". Purposive sampling was used to recruit 32 multidisciplinary key stakeholders and active community health practitioners from private, public and civil sectors (governmental bodies, municipalities, NGOs, WHO, UN agencies, popular Lebanese dietitians, pediatrics, food industry, school health advisors, academic and researchers), and 35 adults (directors, school food services representatives, parents and teachers) and 48 youth (10 - 14 years) from 8 schools (2 private urban, 2 public urban, 2 private semi-rural, 2 public semi-rural).

To reflect the possible impact of socioeconomic dimensions influencing the participants' perceptions of the most effective and trustful nutrition communication channels, the Lebanese school profile (public, private) was considered in the interpretation of the results. Students attending private schools, especially urban private schools, are wealthier and belong to affluent social contexts than students attending public schools in Lebanon.

Data collection

For this current research and based on the results of a larger research aiming to explore perceptions of Lebanese population to an eventual SNP development, only data covering nutrition and PA communication perceptions were analyzed to answer the objective of the study. Further information about the findings from the SNP study is to be found in Hamadeh., *et al.* 2017 [15] and to view supplementary material for the SNP study questionnaire, please contact the author.

The data for this study were collected through directed and semi-structured individual interviews by a single interviewer (author of this study). For teachers and parents, 4 focus groups were conducted with 6 to 8 participants including both profiles in 4 different schools (1 private urban, 1 private semi-rural, 1 public urban and 1 public semi-rural).

The SNP survey questionnaire included 25 questions covering individual, community and organizational variables (personal efficacy, attitude, social norms, mobilization, inter-organizational relationships, etc.), but only results from 4 questions described below are relevant to this research study and are related to “knowledge”, “sources and trust in nutrition information”, “nutrition communication”, and “motivation”. Therefore, respondents were asked the following questions:

Q1. Knowledge: According to you what will be the definition of healthy food? Healthy lifestyle?

Q2. Sources of nutrition information and trust in these sources: In general, what are the principal sources of health and nutrition information in Lebanon? Do Lebanese people trust these sources?

Q3. Nutrition communication: According to you, what will be the best communication channels to receive information about healthy lifestyle?

Q4. Motivation: What will be the arguments to which the young will be sensitive and that push them to act in favor of nutrition communication strategies?

Data analysis

Data from this formative qualitative research study have been submitted to a thematic qualitative analysis. During the first stage of the analysis, key points from each interview were grouped together and reduced to common themes under the 4 questions. Next, major findings for each group of respondents (adult, youth) were synthesized to identify similarities or differences in their perceptions. Complementary perceptions arising from data analysis were compiled and presented in tabular form.

The analysis plan responded to the objective of this study taking into account the importance accorded to the geographic areas (urban, semi-rural) and the school profile (private, public). This perspective informed the analysis in terms of focusing on participants' perceptions of certain relevant issues and ideas, and considering how they may vary among participants. All interviews were audiotaped, transcribed verbatim, reviewed several times and coded by the author of this study. The research was approved by the Ethics Committee of the Faculty of Medicine at University of Montreal.

Results and Discussion

The two types of formative research “stakeholders' meetings” and “gender analysis” used in this study provide us with essential information to guide the nutrition and PA communication strategy decisions. Interviewing community health workers, nutrition program managers, clinical staffs, community leaders and other key Lebanese stakeholders is crucial to explore their insights on different dimensions of a nutrition communication strategy's potential impact on youth and their environments. Moreover, gender analysis is an important method to understand how gender differences affect access to nutrition information sources and their participation in development activities. Thus, we found that the gender and age associations were consistent with earlier findings relating to health concerns, attitudes and practices, and trust [21,22]. Females are more likely interested in nutrition and health information than males. On the other hand, males are more concerned in PA issues than females.

Data from 115 people enrolled in this exploratory formative research study helped us to understand that factors leading to eat more can also lead to eat less, to promote healthier food, and more generally increase the importance youth attach to health over taste, convenience, price and social acceptance when making food and PA choices. Moreover, it's important to examine the interplay of marketing factors and cultural, social and individual characteristics [23].

Consistent with other studies [21,23], social marketing approach is a fundamental and powerful tool for nutrition and PA communication programs. More specifically, social marketing used in this study showed how youth dietary behaviors, health attitudes and lifestyle choices may be affected by beliefs about what is normal, socially acceptable, heavily communicated and by their self-efficacy to control their own health [15,21,33].

Respondents' perceptions

All interviewed persons had recognized that proper nutrition is a modifiable risk factor for several chronic diseases although decision making related to food is very complex [34]. Many different factors drive people's healthy choices not just knowledge about nutrition, but also how one has been socialized around food (e.g. whether one grew up eating dinner at the family table or going out for fast food), how food is marketed (which influences attitudes and behaviors), whether and which foods are available (e.g. the proximity of grocery stores), and policies concerning food (e.g. how many fast food restaurants are allowed in schools' neighborhood) [17,35].

Participants of this study supported the fact that knowledge about food and nutrition can improve the quality of consumption choices but alone is not enough. They emphasized the importance of motivation, ability, and opportunity to apply that knowledge when making healthy food and lifestyle choices. Besides, identifying known barriers to behavior change that go beyond awareness and knowledge should be considered. For example, one of the main barriers to adopt promoted nutrition behaviors is the fact that the target population is pre-knowledgeable. Hence, people food literacy influences their understanding of nutrition information communicated and if they will act on it in a way that will be consistent with nutrition goals and with food well-being [17,25]. For example, all participants shared similar perceptions of healthy food and healthy lifestyle while answering the Q1 related to knowledge:

"Healthy food helps in maintaining a good health and in preventing diseases such as diabetes, hypertension, CVD, etc. Usually, it is low in sugar and fat, and high in vitamins and minerals"

"Healthy lifestyle is a state of physical, mental and social well-being gained by having healthy habits, good diets, regular PA"

Since different stakeholders were interviewed, the results of this study revealed mutual and complementary perceptions (Table 1) related to the questions of the study. Participants agreed on which sources of health and nutrition information they trust - Q2:

"Parents, physicians and dietitians hosted in TV shows are the main sources of trustful information. Youth, in particular, also trust internet information"

They also identified common characteristics of the best channels for nutrition communication- Q3:

"Different modalities and applications of channels should be used to communicate nutrition and PA information. Channels have to be attractive, innovative and visual. Using all types of media is fundamental"

Furthermore, all respondents perceive that nutrition and PA arguments should fulfill the needs of audience in order to push them to act in favor of nutrition communication strategies- Q4:

"Nutrition and PA communication strategies should be tailored according to the needs of different segments of the population. Usually, it's difficult to motivate teenagers rapidly"

The data detailed in table 1 describe the complementary perceptions of respondents related to the 4 questions of the study.

Respondents also reported importance of supplementary individual, community and organizational characteristics (detailed in section 6.2 and 6.3) that may help community practitioners, decision- and policy- makers to apply a successful nutrition communication. Therefore, alternatives communication strategies for improving healthy behaviors based on predictive, personalized and participatory interventions may be more effective than conventional generalized nutrition advises, "one size fits all" [11,35].

Questions of the study	Participants' profile			
	Gender	Age	Geographical areas	School profile
Q1: According to you what will be the definition of healthy food? Healthy lifestyle?	NA	Adolescent: healthy lifestyle is also having a good social integration Adult: healthy lifestyle is living without stress	NA	NA
Q2: In general, what are the principal sources of health and nutrition information in Lebanon? Do Lebanese people trust these sources?	Males: fathers for boys Females: mothers and old sisters for girls	Adolescent: 1- peer-to-peer circulating information 2- higher interest in PA information Adult: words of mouth (colleagues family members, neighbors)	Urban: 1- mass and social media, internet 2- urban people are more likely interested in PA information than rural people Semi-rural: written media	Private: 1- mass and social media 2- students in private schools are more likely interested in PA information Public: teachers, TV: talk shows (Dr Phil, Oprah, Dr Oz) and documentaries
Q3: According to you, what will be the best communication channels to receive information about healthy lifestyle?	Males: games, entertainments Females: advertisements in all media channels	Children: verbal communication especially from parents Adolescents: audio-visual channels Adults: social media and TV	Urban: TV talk shows, real-life experiences Semi-rural: 1- health experts 2- communication during extra-school activities	Private: 1- role models and idols (singer, actor, family member) 2- peer-to-peer method Public: physicians and renowned dietitians
Q4: What will be the arguments to which the young will be sensitive and that push them to act in favor of nutrition communication strategies?	Males: use of arguments enhancing peer acceptance and promoting how to "be fit" Females: arguments about body image and social acceptance (being in-shape)	Children: use of innovative and original arguments Adolescents: arguments boosting social acceptance "being IN"	Urban: encouragement and amusement methods Semi-rural: 1- use of demos and real examples 2- arguments showing effects on health	Private: promote opportunities to emancipate youth participation and to gain autonomy Public: 1- presenting new ideas 2- use of fear appeal messages

Table 1: Respondents' complementary perceptions associated to the study questions about knowledge, sources and trust in nutrition information, nutrition communication, and motivation.

Framework for strategic design of nutrition communication

People communicate with each other in a number of ways that depend upon the message and its context in which it is being sent. Several challenges are encountered while communicating scientific nutrition information to the public, including; 1) heterogeneity of the consumers, 2) content and type of the message (formal/informal, verbal/nonverbal, coaching, counseling), 3) social conditions that may

impact the ability to promote health issues, 4) different aims and agenda of all type of health communicators, 5) other developed information sources that will be competing for the attention of the targeted audiences, and 6) national and institutional legislations that may affect the effective promotion of healthy lifestyles [22,25].

Nutrition and PA communication is a multi-way process (Figure 1) that is affected by different factors such as resources (human and financial), time allocated to the communication strategy, behaviors that are being targeted, dimension of the communication strategy, and mobilization of multidisciplinary stakeholders.

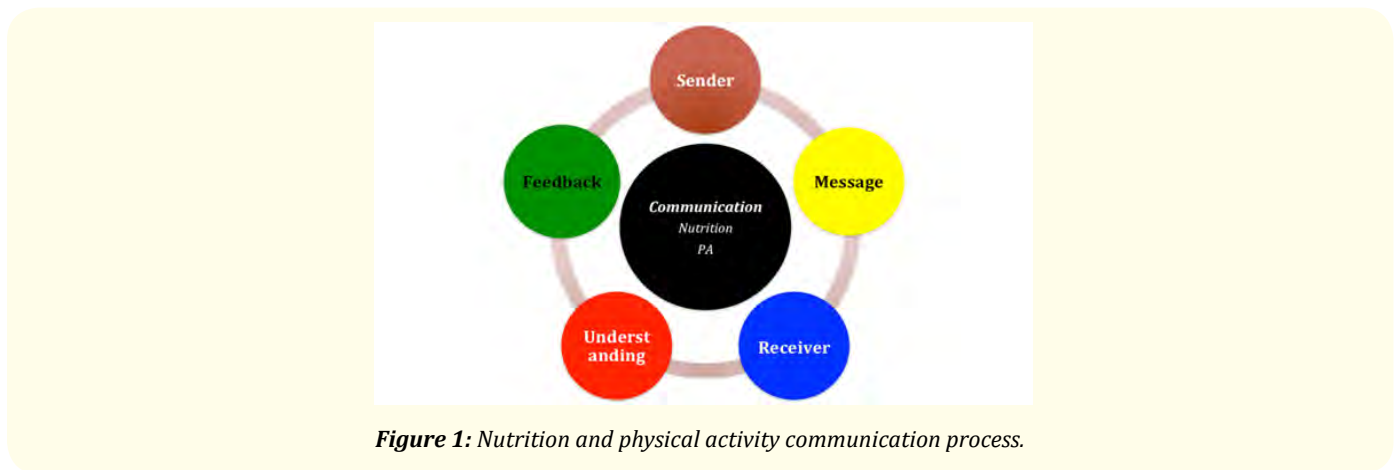


Figure 1: Nutrition and physical activity communication process.

Different channels enable to reach the targeted audience or receiver of the nutrition information such as interpersonal, community-based, and mass and social media channels [18,25]. Tools are the tactics used to send messages through these channels and include advertising, publicity, entertainment education, community participation, and sponsorships or events management [18,23,25]. The challenge is to choose the best combination of tools to follow the strategic approach and achieve the objectives of nutrition communication. However, all messages regardless of how they are communicated or by whom should consistently contain the same core nutrition information. Furthermore, effective nutrition communication should develop consistent messages that command attention, cater to the heart and head, communicate a benefit or need and create trust [25,37]. Figure 2 illustrates the framework for strategic design of nutrition and PA communication. This framework represents how a tailored communication approach should consider information elicited from consumers/receivers to create a message based on their current beliefs, habits, attitudes, knowledge and social structure [38-40].

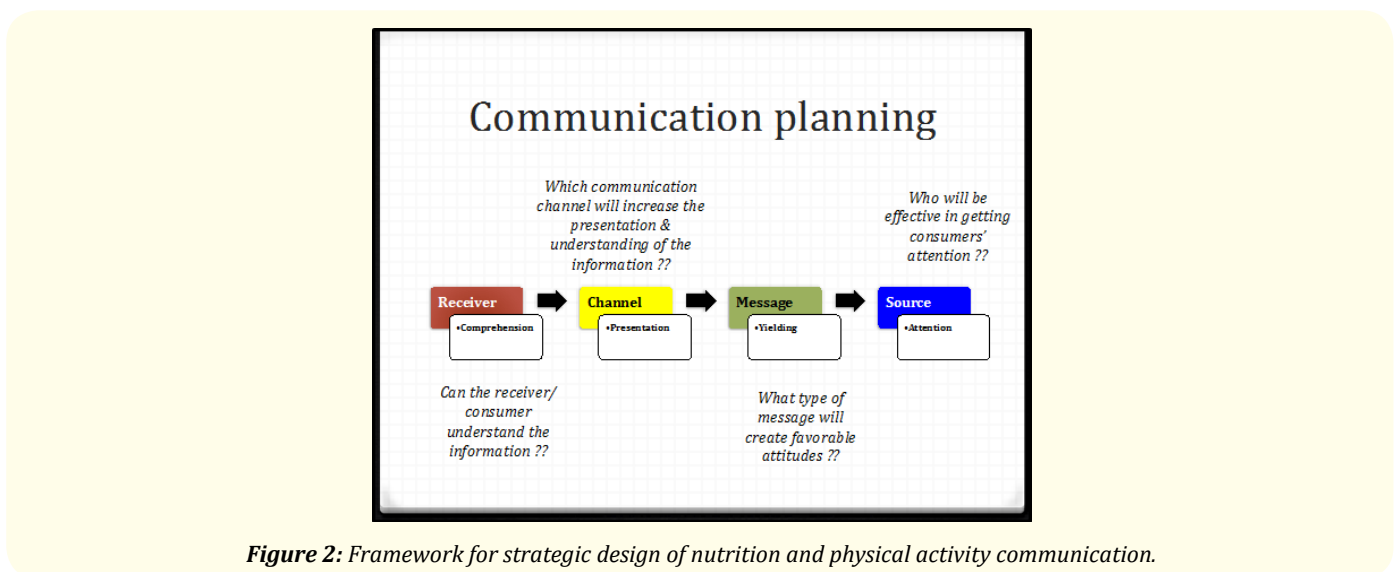


Figure 2: Framework for strategic design of nutrition and physical activity communication.

Recommendations for effective nutrition and PA communication strategies

The present study showed that food socialization includes the processes by which people learn about food and PA. It begins early, within one's family, either implicitly (e.g., parents modeling cooking or eating patterns such as skipping breakfast) or explicitly (e.g., parents telling children that they should not eat too much sugary food). In addition to the information that is thus passed along, family, especially mothers, exert a normative pressure that helps determine how a child will think about and relate to food in the future.

Although these early family-level processes may be the most significant type of food socialization, there are others as well. People live within societal structures, including peers, religious rituals, media, and marketing [23]. It is crucial to consider the interplay between how children and adolescents are socialized within their families and peers, and how the broader societal structures provide health information and influence their behaviors. Precisely, food and beverages companies are playing a prominent role in the digital marketing arena developing interactive advertising campaigns, many of which are tailored specifically for children and adolescents [18,23]. Nevertheless, these companies need to be involved in improving the nutrition status of the populations they serve by addressing food reformulation, responsible marketing, consumer information, promotion of healthy lifestyles and public private partnerships [41].

As the field of nutrition communication continues to evolve, there is an ongoing need among policymakers, communication professionals, program staffs, and food industries for useful tools to help them apply their communication expertise in strategic and innovative ways [25]. A key objective of nutrition and PA communication, especially among youth, is to define clearly population segments so that the message can serve the needs of a given segment in the best way possible.

Communication technology is a central fixture within our society and has radically changed individuals' social interaction, learning strategies, and choices of entertainment [36,42]. An earlier systematic review of the effectiveness of e-Learning approaches for improving dietary behaviors found that the use of interactive electronic and social media facilitate teaching and learning on a range of issues including food, PA and health [43]. The high level of accessibility, combined with emerging advances in information transmission and data storage, makes tailored interactive digital-based technologies a potentially powerful and cost-effective medium for nutrition communication to improve dietary behavior especially among youth [36,43,44].

Compared with traditional approaches for nutrition and PA communication, digital-based technologies also has a number of potential advantages, such as 1) personalized- the possibility of tailoring to individual circumstances; 2) convenience- the information could be available to individuals when and where they wish to use it, and be equally available on a number of devices; 3) sustainable- translating complex information through engaging dynamic means including video, graphics and audio systems to maximize the likelihood that participants will maintain long-term changes in healthy lifestyles patterns and so maximize gains in health and wellbeing; 4) scalable – the information is not restricted to any geographical location and could be available to unlimited numbers of participants over wide geographical areas with diverse socioeconomic circumstances; and 5) economic- potential cost savings on updating and face-to-face interventions involving health-care professionals [36,43,44].

Besides, there is an imminent need to check and monitor the health information communicated in order to counter the misleading claims. Similar to implemented codes in some countries [1,22], governmental bodies in Lebanon should adopt some regulations and policies for food marketing and nutrition communication to support the best use of food, PA and health information by consumers especially children and adolescents. Such regulations help to protect young generation from commercial pressure to eat healthier and to be active. In addition, such resolution will also call on manufacturers, distributors and marketers to comply fully with their responsibilities under the governmental regulations [45].

Finally, effective communication strategies should develop culturally relevant nutrition messages and delivery systems that take into account; the barriers to healthy lifestyles, the information sources, and the distinct population segments.

The research has a number of strengths. First, the study is the first of its kind in Lebanon and the Arab countries where similar socio-cultural beliefs and health practices are found in order to decrease chronic diseases. Second, the current study presents new evidence regarding the challenges and opportunities for developing cost-effective nutrition and PA communication strategies. Third, study participants represented a broad range of community practitioners and multidisciplinary key stakeholders working on nutrition, and health education and promotion. Therefore, they suggest that people in a variety of roles may be engaged in nutrition and PA communication strategies [46].

Our research should be interpreted with the following limitations in mind. Knowledge and data pertaining to previous nutrition communication researches in Lebanon are marginal. The support of applied research is needed in order to plan, develop and evaluate evidence-based communication strategies [47]. This study is exploratory and intended to inspire insights rather than draw firm conclusions [48].

Findings from the present study will be of value to researchers who wish to design and implement health communication programs. Further research is urgently needed to evaluate the effectiveness of modern nutrition communication strategies such as social media [18,24] to promote healthy lifestyle behaviors in order to prevent chronic diseases at all ages. Qualitative evaluation is essential to explore why and how health behavior change will take place and to provide insights that can be useful in refining and improving future nutrition and PA communication strategies [25].

Conclusion

Nutrition and PA communication strategies development is an ongoing process that evolves based on audience, environment, and communication factors. Changes in the sociopolitical environment or communication channels may have significant implications for the strategic communication approach. Therefore, systematic evaluation of nutrition and PA communication strategy ensures the viability and appropriateness of the factors that originally determined the strategy.

Finally, comprehensive sociocultural-based nutrition communication strategies can help to successfully promote nutrition, PA and prevent diseases.

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Volume 11 Issue 2 October 2017

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