



Why Physical Inactivity Level Has Increased in the Iranian Population During the Past Decade? A Delphi Technique

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Abstract

Background: Considering the well-established benefits of physical activity in the health domain, the economy, and environment, physical activity programs should be considered as an important agenda in public health policymaking.

Objectives: The objective of this qualitative study was to identify “Why the prevalence of physical inactivity has increased during the past decade in Iran, despite having various national physical activity documents?” using a Delphi technique.

Methods: The “Delphi technique” process in this study consisted of literature review, selecting the research question, selection and recruitment of panel members, pilot study and conduction of round one (using an open question), round 2 (using a 5-point Likert scale), and round three (final ranking).

Results: Statements with the highest scores in round three were recognized as the most important causes of the decreased level of physical activity based on the experts’ responses in Iran.

Conclusions: The absence of executive support, coordination mechanisms, and appropriate infrastructure for conducting physical activity were the top challenges in improving the physical activity level in Iran.

Keywords: Low Physical Activity, Delphi Technique, National Action Plan, Inactivity

1. Background

The protective role of regular physical activity against coronary heart disease, depression, type 2 diabetes, hypertension, obesity, osteoporosis, colon, and breast cancer has been established (1-4). Insufficient physical activity is one of the major risk factors for non-communicable diseases, which leads to 9% of premature mortality (2, 5, 6).

Considering the well-established benefits of an improved level of physical activity in the health domain, the economy, and the environment, it should be considered as an important agenda in public health policymaking (7). In the last two decades, many countries have implemented different kinds of interventions and ratified national documents for promoting physical activity (8, 9). During the past decade, Iran did the same and has authorized various national documents by different stakeholders to increase the level of physical activity. However, in practice, the prevalence of physical inactivity in the Iranian population has increased based on the national STEPwise studies

(10-13).

To be effective, physical activity promotional documents and interventions need to be precisely described and implanted in governmental and other stakeholders’ routine plans. The process of implementing such an intervention in a nationwide perspective needs many stages to be processed one after the other to finally make a change in both professionals’ and the population’s behavior. While the process of behavioral change will be influenced by many factors, the overall stages consist of adaptation, implementation, and continuation (14, 15).

2. Objectives

The objective of this qualitative study was to identify “Why the prevalence of physical inactivity has increased in Iran during the past decade, despite having various national documents for promoting physical activity?”. Therefore, to clarify the reasons for the current gaps between existing physical activity documents and the increased level

of physical inactivity, we conducted a Delphi technique study to achieve a consensus statement of expert opinions in this domain to assist policymaking in Iran. The results of this study could be a solution to the challenging situation of increased physical inactivity levels in Iran, despite available national action plans.

3. Methods

3.1. The Delphi Technique

The Delphi technique is a consensus structured method used in various domains, including policy planning. The principle of the method is aiding experts in a specific domain to analyze a complex problem through a structured discussion group method to interpret the rationales of the situation. The Delphi technique consists of a series of questionnaire rounds, all designed based on an initial main challenging question. This study aimed to identify the gaps between physical activity policies and their impact on physical activity levels. The “Delphi technique” was selected to conduct this research to achieve a consensus, assess weaknesses and requirements, conduct a situational analysis and determine priorities to improve physical activity based on physical activity experts’ opinions in Iran.

The “Delphi technique” process in this study consisted of literature review, selecting the research question, selection and recruitment of panel members, pilot study and conduction of round one (using an open question), round 2 (using a 5-point Likert scale), and round three (final ranking).

3.2. Selection and Recruitment of Panel Members

A team consisting of sports medicine experts was formed to search PubMed, Scopus, and Google Scholar to compile a list of problems mentioned in existing sources and articles with the purpose of the promotion of physical activity to formulate the research question. Subsequently, they designed a Delphi technique to reach consensus on “Despite the available national approvals and policies, why the prevalence of physical inactivity among the Iranian population has increased” as the main question.

After determining the research question, a small workgroup of clinical and research experts in the physical activity domain (25 individuals) with a homogeneous background were selected as the members of the expert panel about the study’s objectives. Inclusion criteria of the members of the expert panel were having adequate related knowledge in the physical activity domain, having at least five years of experience in the physical activity domain,

and the willingness to participate in the study. These experts have been selected among all individuals active in the area of physical activity in Iran at educational, research, technology, academic, and executive levels.

Information was transferred to the experts via email and fax, and their responses remained anonymous.

3.3. Round 1

As the first stage, a questionnaire was designed concerning the following open question: “Despite the available national documents and policies, why the prevalence of physical inactivity among the Iranian population has increased”. Then, a pilot study was conducted in collaboration with five sports medicine researchers and experts to correct the questionnaire and approve the framework. The round 1 questionnaire was sent to 25 experts. Experts were asked to use the brainstorming technique to complete the questionnaire and specify the causes of inactivity.

3.4. Round 2

At this stage, a structured 48-item questionnaire was designed, using the responses obtained in the round 1 questionnaire. This structured questionnaire was used as a tool in round 2 (16). The participants were asked to specify the importance of each phrase using a 5-point Likert scale (1 = not important; 2 = little important; 3 = average (or no opinion); 4 = important, and 5 = very important). Moreover, the participants were able to give feedback on the phrases in the “comment” section of the questionnaire and determine whether all their statements (made in the first round) have been included in the questionnaire or not. This questionnaire was also revised by four physical activity experts for necessary corrections and revisions. The questionnaire was sent to all 21 participants twice (with a two-week interval), while one of them refused to continue.

3.5. Round 3

In this round, the participants were asked to express their opinions on the importance of the phrases selected in round 2, using yes/no responses. The participants were asked to review their responses and, if necessary, revise their previous opinions, while expressing their explanations after two weeks.

3.6. Agreement, Consensus, and Stability

Delphi methods do not obligate the contributors to reach an exclusively agreed conclusion; it is practical to evaluate if an agreement exists or not in a specific domain. The term “agreement” or “consensus” could be specified within each round and between rounds (17). In this study, the agreement statement was defined as the phrases that

were selected as “important” or “very important” by 50% of the participants and higher at round two. The sum of all the scores given by the participants on the 5-point Likert scale was expressed as a total index weight following round two. To assess the stability of the response of the experts, at round two and three, the questionnaire was sent to participants twice with a two-week interval (17).

4. Results

4.1. Round 1

Twenty-one (out of 25) individuals completed and submitted the questionnaires. At the end of the first round, 286 phrases were collected, which were finally limited to forty-eight phrases. These phrases are presented in the index column of [Table 1](#).

4.2. Round 2

The responses given by the participants were used to calculate the “importance of each phrase”. In this regard, the phrases which were selected by 50% of the participants and higher as “important” or “very important” were defined as agreements ([Table 1](#)). The total index weight following round two was determined via the sum of all the scores given by the participants in the 5-point Likert scale. Finally, 15 phrases were selected as the basis for the third round.

4.3. Round 3

The round 3 questionnaire was sent to 20 participants twice (with a two-week interval). Eighteen individuals completed the questionnaire. The responses were accepted or slightly modified based on the participants’ opinions. At this stage, only phrases with at least 50% agreement in round two, were recruited. Results indicated that questions 1 and 3 (with 12 points), question 15 (with 11 points), and question 2 (with 10 points) have the highest scores ([Table 2](#)).

Regarding the stability of expert panel members’ responses, none of the panel members changed their rating within rounds two and three.

5. Discussion

This study aimed to investigate the reasons for decreased levels of physical activity, despite existing physical activity policies. The objective of this study is to reduce the current problems via developing and implementing interventions that target priorities in Iran. To determine the major causes of low physical activity, the pundits’ opinions were collected using the Delphi technique. Final

results indicated that the top listed reasons which were proposed via physical activity experts in Iran were lack of an integrated and comprehensive strategic document with reliable, complete enforceability, lack of systematic internal and external coordination and cooperation mechanisms among stakeholders, inappropriate urban infrastructures designed for physical activities (e.g., walking and biking), and shifting from health-centered policies (preventive and educational approach) towards the treatment-centered policies.

Major challenges proposed by experts in improving physical activity in Iran in our study were the lack of an integrated and comprehensive strategic document with reliable, complete enforceability and lack of systematic internal and external coordination and cooperation mechanisms among stakeholders. Moreover, the Toronto Charter for Physical Activity emphasizes the need for a unified national policy and document for physical activity in countries based on their specific requirements (7, 18). Successful physical activity promoting programs indicate that involvement and cooperation of all stakeholders within and outside the health sector is a key principle of the program (19). To ensure the implementation of policies in designing physical activity enhancement infrastructures, the health sector needs to work in close collaboration with municipalities for transportation, the education sector for attitude change, and the sports sector to hold public sports conferences (19). Global evidence supports the importance of having a comprehensive national program for physical activity enhancement (20). This comprehensive approach should be developed based on multiple collaborations between major researchers and policymakers in the field of physical activity programs to fill the gap in the implementation of such programs and the adoption of a better course of action in policymaking, assessment, and identification. The need for such collaborations to enhance physical activity is specifically highlighted in low- and moderate-income countries (21). According to the Bangkok Declaration on Physical Activity for Global Health and Sustainable Development, held in six ISPAH congresses on physical activity and general health, collaboration, supervision, and commitment of governments, policymakers, and stakeholders are required to enhance physical activity. These national measures should be able to attract the advocacy of stakeholders within and outside of the health sector. Strengthened platforms and documents should be set to integrate political policies by determining the priorities and responsibilities (21). In other words, it is essential to create a strategic relationship between effective governmental agencies, stakeholders, and policymakers to establish priorities for sustainable implementation at national and international levels (19, 21-24).

Table 2. Expert Panel Scores for the Final Reasons of Physical Inactivity

Question	Scores
Lack of systematic internal and external coordination and cooperation mechanism among stakeholders	12 (first priority)
Lack of an integrated and comprehensive strategic document with a reliable complete enforceability	12 (first priority)
Inappropriate urban infrastructures designed for physical activities (e.g. walking and biking)	11 (second priority)
Shifting from health-centered policy (preventive and educational approach) towards treatment-centered policy	10 (third priority)
Inappropriate culture in the area of public sports	9
Inconsistencies between programs (proposed by stakeholders) and requirements of the target population	6
Increased use of e-devices both at work and during leisure time, due to recent advancements in technology and urbanization	6
Cultural and religious challenges restricting the activity of women in society	4
Inappropriate physical education	4
Insufficient information and advertisement on physical activity	4
Low priority of physical activity among individuals and families	3
The lack of a specific management, supervisory, or coordinating mechanisms in this area at national and organizational levels	2
The inconsistency between the mass media content and public demand	2
Rigid program developed for small provinces and cities	1
Unequal distribution of trained physical activity experts in different regions (e.g. rural areas)	1

Inappropriate urban infrastructures designed for physical activities (e.g., walking and biking) is another challenge in improving physical activity proposed in our study. Urban and rural planning strategies should be strengthened and implemented to improve the physical activity level (25, 26). Designing ideal urban environments that improve the safety and attractiveness of the sidewalks, encourages people to walk, and increases the participation of individuals with different socioeconomic levels in various physical activity programs in the country equally, is a principal strategy to increase physical activity level (19). The WHO document "Healthy city is an active city" states that land use patterns, urban design, transport systems, green spaces, and all environments designed and built by human sources are components of built environments (27). Reinforcement of built and social environment components will lead to creating accessible, equal opportunities for individuals at any age and with any ability level to participate in physical activity programs (27).

Experts in our studies have proposed shifting from health-centered policies (preventive and educational approach) towards the treatment-centered policies as another barrier to improving physical activity. Development and reinforcement of non-communicable disease prevention action plans in developing countries are mandated to improve the health status of individuals (28). Primary prevention is a basic principle in this domain, and improving

physical activity level is one of the major determinants in preventive strategies (19). Investments in preventive domains will lead to economic improvement and higher capital return (29). The expansion of healthcare costs throughout the world and the consequent increase in costs puts a huge financial burden on the healthcare system of developing countries. Considering the cost-effectiveness of preventive strategies in non-communicable disease, developing physical activity enhancing programs is a priority, particularly in developing countries (30). Based on a recommendation by the WHO in 1986, the Health Promoting Hospitals and Health Services (HPH) Network should establish prevention units and culturally institutionalize the concepts of health enhancement, such as self-care strengthening, prevention, and screening through designing an education/prevention structure (31).

In a systematic review by Al-Hazzaa (32), enhanced urbanization, heavy traffic, inappropriate climate, cultural barriers, absence of social support, lack of physical education programs in female schools, and lack of time and appropriate infrastructure were determined as the major causes of physical inactivity in Saudi Arabia. In a systematic review by Benjamin et al., major barriers to physical activity in residents of middle eastern countries and the United Arab Emirates were categorized as individual issues (including insufficient time and medical problems), social and policy-related issues (including cultural laws for women and insufficient social support), and the environ-

mental issues (including inappropriate climate and insufficient exercise facilities) (33). In a focus group study by Hoebeke (34), the principal barriers to physical activity at the individual level among women of low-income countries were exhaustion of daily life duties, traditional challenges, medical problems, lack of child nursing support, and insufficient reinforcement. In a study by Amin et al. (35) main barriers to leisure-time physical activity were inappropriate climate, cultural issues, insufficient facilities, and lack of time in Saudi Arabia. In a study by Samir et al. in Pakistan, the main barriers to physical activity were insufficient information, inspiration, and skills, domestic support, availability of environments suitable for physical activity, cost-effective equipment, and time (36). The findings of the studies mentioned are consistent with our study results at the individual level, including inappropriate culture in the area of public sports, cultural and religious challenges restricting the activity of women in the society, inappropriate physical education, insufficient information and advertisement regarding physical activity, and the low priority of physical activity among individuals and families. The existing inconsistency of the findings is because, in the previous studies, challenges at the policy-making level were not evaluated.

5.1. Limitations of This Study

In spite of our effort to choose experts from similar positions in different organizations, some disparities exist, which is inevitable, and there are some varieties in experts' organizational position which could not be completely excluded. Lack of motivation by participants and their unwillingness to participate according to the wide time frame of the process was challenging, which led to the exclusion of some experts who refused to respond.

5.2. Strengths of This Study

In the Delphi technique, the expert panel selection process is very important; therefore, in this research, experts with the valuable scientific and practical experience from all organizations involved in the physical activity domain were invited, consequently it was possible to generalize the results. Adding provincial representative experts in the study is another positive point, which increases the strength to generalize the results of this study. In the process of developing questionnaires of the different rounds, facilitation of the feedback process during different rounds stimulated new ideas and promoted innovation for other participants.

5.3. Conclusions

According to the results of this Delphi study, the absence of executive support, coordination mechanisms,

and appropriate infrastructure for physical activity were the top challenges in improving the physical activity level in Iran. The process of policymaking requires reliable background information about current challenges and a consensus of judgment made by physical activity experts, which are provided by this study.

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Footnotes

Authors' Contribution: Study concept and design: RK. Analysis and interpretation of data: MM and AK. Drafting of the manuscript: AK. Critical revision of the manuscript for important intellectual content: MS and BH. Statistical analysis: MM.

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Table 1. Results of Second Round

Index ^a	Agreement ^b	Total Index Weight ^c
Low priority of physical activity among individuals and families	×	93
Lack of required organizational infrastructure and human sources to conduct current programs		71
Lack of a suitable transportation system required for facilitating access to existing sports venues		57
Inadequate national budget for physical activity in areas of policymaking, planning, monitoring, education and research		75
Unequal distribution of green spaces across urban and rural areas		64
Lack of enough time to exercise (due to high working hours)		66
Insufficient presentation of major health-centered policies in mass media		83
Increased use of e-devices both at work and during leisure time, due to recent advancements in technology and urbanization	×	83
Insufficient monitoring and evaluation programs		82
Inappropriate strategy of programs in existing national guidelines		79
The lack of specific management, supervisory, or coordinating mechanisms in this area at national and organizational levels	×	83
Rigid programs developed for small provinces and cities	×	69
Lack of functional programs despite developing action plans and programs		83
Inconsistencies between programs (proposed by stakeholders) and requirements of the target population	×	86
Lack of responsiveness of executive organizations and bodies to relevant laws on physical activity		86
Insufficient evidence-based support for health policies		67
Shifting from health-centered policy (preventive and educational approach) towards treatment-centered policy	×	88
Lack of skilled physical education experts in organizations to encourage staff to physical activities		70
Prioritization of championship over public sport		79
Insufficient infrastructures and facilities (in terms of per capita)		77
Expensive membership costs in sports clubs and high cost of home based exercise equipment		71
Insufficient NGOs active in physical activity domain		74
Lack of systematic internal and external coordination and cooperation mechanisms among stakeholders	×	86
Lack of behavior change experts in physical activity domain		70
Complex policies		68
Failing to clearly specify proper age groups for various activities in accordance with available policies and programs		69
Developing short-term plans instead of effective long-term plans		77
Insufficient information and advertisement on physical activity	×	84
Lack of relevant national programs and plans for disabled people and seniors		74
Inappropriate physical education	×	88
Lack of an integrated and comprehensive strategic document with a reliable complete enforceability	×	89
Cultural and religious challenges restricting the activity of women in society	×	87

Insufficient knowledge of physical activity experts about public issues and challenges		70
Lack of safety in public sports venues (high likelihood of physical injuries and social harms)		60
Inappropriate urban infrastructures designed for physical activities (e.g. walking and biking)	×	90
Unequal distribution of trained physical activity experts in different regions (e.g. rural areas)	×	66
The inconsistency between the mass media content and public demand	×	85
Inappropriate condition of sports venues and low quality of provided services such as heating, ventilation, and air conditioning (HVAC) systems and other facilities		67
Giving low priority to physical activity by senior managers and stakeholders		87
Various types of urban pollutants, especially air pollution		76
Prevalence of mental disorders (e.g. anxiety, depression, isolation, and indifference)		75
Poor economy		76
Short term management in relevant ministries and changing priorities following the replacement of top managers		80
Inappropriate culture in the area of public sports	×	92
Allocating inadequate budget to physical activity in specific groups (e.g. women and children)		78
Insufficient public awareness about the benefits of physical activity		78
Insufficient private sector		69
Ignoring physical activity as a major revenue-generating resource		64

^aThe index column presents the 48 phrases obtained in the first round.

^bThe phrases that were specified as “important” or “very important” selected by 50% of the participants and higher, were defined as agreements.

^cThe sum of all the scores given by the participants in the Likert spectrum.