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Policy analysis of cervical cancer prevention in Iran based on the policy triangle model

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Abstract:

BACKGROUND: Widespread use of screening in high-income countries has led to a significant reduction in cervical cancer mortality. Most low- and middle-income countries still have poorly organized screening programs. This study aimed at policy analysis of prevention and early detection of cervical cancer in Iran, a middle-income country.

MATERIALS AND METHOD: This qualitative retrospective study, extended by the health policy triangle model, was conducted from July 2020 to September 2021. A sample of this study consisted of 43 participants, including 16 key policy experts; nine 11 senior health system managers, 13 executives, and 3 clients selected purposefully. Data were collected through semi-structured interviews using the interview guide and analyzed using a framework analysis method based on the policy triangle model in MAXQDA₂₀₂₀.

RESULTS: Nine themes, 15 subthemes, and 36 codes were extracted based on the 4 dimensions of the model; stakeholder analysis challenges, including conflict of interest and decision-making challenges. Moreover, the most important policy process challenges indicated the weakness of monitoring and evaluation systems and weakness of using scientific principles in policy making. Weakness of organizational and intersectoral structure and weakness of executive management were obtained among the challenges in the context analysis. Finally, the most important challenges related to content analysis are weaknesses in applying scientific principles in policy making, including weaknesses in standard operating procedures, and low use of HTA capacity in developed guidelines.

CONCLUSION: A wide range of economic, social, and cultural problems can affect cervical cancer prevention policies. Several strategies are suggested to overcome these challenges, including allocating separate funds to cancer prevention programs, using structures to sustain prevention programs, designing, and using them to improve public awareness.

Keywords:

Policy, prevention and control, uterine cervical diseases

Introduction

Cervical cancer could be defined a malignant tumor of the lower most part of the uterus that can be prevented by Pap smear screening is a crucial component of women's healthcare, aimed at detecting abnormal cervical cells early on to prevent the development of cervical cancer, which can be life-threatening if left untreated and This vaccine is designed to protect against

various strains of the human papillomavirus, which is a sexually transmitted virus that can lead to various health issues, including genital warts and certain types of cancer, such as cervical, anal, and pharyngeal cancer. According to statistics from the International Agency for Research on Cancer (IARC), cancer is the second leading cause of death in the world and the cause of 9.6 million deaths in 2018.^[1] The World Health Organization (WHO) estimates that there were approximately 570,000 new

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cases of cervical cancer in 2018, accounting for 6.6% of all female cancers.^[2] Cervical cancer is the fourth most common cancer among Iranian women.^[3] Other IARC statistics show the age-standardized incidence rate, mortality, and prevalence of cervical cancer in Iran were 2.2, 1.5, and 7.1 per 100,000, respectively.^[4] Also, the cervical screening coverage rate is reported to be inadequate in Iran,^[5] at approximately 49.9% compared to 85–93% in other countries.^[6,7]

The structure establishment of primary health care following the inefficiency of treatment-oriented attitudes has had a significant impact on pay attention to prevention. Widespread screening in high-income countries has led to a reduction in cervical cancer mortality.^[3] Despite the positive effects of implementing screening programs in some low- and middle-income countries,^[8,9] most low- and middle-income countries still have poorly organized screening programs.^[10]

In Iran, the “Irapen” program, in which cervical cancer screening is one of its most essential components, has been implemented in Iran following the Global Action Plan for 2013–2020,^[11] and the National Cancer Control Program is the most important national program related to the non-communicable diseases’ control plan.^[12]

Iran had a population-based screening program for cervical cancer prevention in the 1990s, but it was discontinued due to inefficiency and the low incidence of this cancer in Iran compared to Western countries. The present screening program is opportunity-based, which means that Pap smear tests will be performed at the ages of 30–59 at 5-year intervals, on the advice of medical professionals and at their own cost. Because women commonly receive Pap smears during fertility and youth (less than 30 years of age), which is relatively far from the age of cervical cancer onset, the weakness of screening high-risk women is the main problem with the present screening program.^[13]

Despite advances in cancer screening, cervical cancer remains a health problem in the Iranian female population. Regarding the impact of cervical cancer on marital relationships and childbearing, the positive significant correlation between the precancerous lesions treatment of the cervix with premature delivery and low birth weight, and other factors associated with the incidence and mortality rates, policy analysis of early detection, and prevention seems important. Also, another reason for conducting this study is the effect of maternal and child mortality and disability on the development of a country. The Sustainable Development Goals (SDGs) are a set of 17 global objectives established by the United Nations in 2015 as part of the 2030 Agenda for Sustainable Development. These goals were

created to address a wide range of social, economic, and environmental challenges facing the world today.^[14–16] Women’s health is one of the priorities of the health system at all times of life, especially during the reproductive period. Furthermore, policymakers may decide to modify cervical cancer preventive recommendations after identifying challenges.

There was no research that analyzed Iranian policies for preventing cervical cancer based on the policy triangle model. Given the factors mentioned above, this study aims to provide a policy analysis of cervical cancer prevention in Iran. In this study, the policy analysis framework of Walt and Gilson^[17] has been used for policy analysis, because it has been developed specifically for health. This framework focuses on the content of policies, actors, contexts, and processes.^[17]

Material and Methods

Study design and setting

This qualitative retrospective study was conducted through content analysis from July 2020 to September 2021. This study has analyzed cervical cancer prevention policy in Iran based on the Walt and Gilson triangle model. This mode has formed four components, including content, context, actors, and the process. This framework is recommended in developing countries for investigating the problem, their relationship, and how different factors are involved in an issue.^[17] One of the components, including process analysis, was conducted based on the Conceptual Framework for State Analysis.^[18,19]

Study participants and sampling

The sample consisted of 43 participants selected through purposive sampling and snowballing techniques to identify other participants. Sampling was performed based on WHO guidelines, in which participants stayed in four different levels of the health system, including policy level, regional level, clinical level, and community level.^[20] The participants were medical university officials, researchers, policymakers at the micro, medium, and macro levels in the Ministry of Health, health insurance organizations, the Iranian Medical Council, the parliament, the Academy of Medical Sciences, and the staff of community health centers (i.e., not-for-profit, consumer-directed health-care organization that provides access to high quality, affordable, and comprehensive primary and preventive medical, dental, and mental health care). Select at least three participants from each level. Participants had no previous relationship or familiarity with the interviewer, and confidentiality was emphasized in interviews. Informed consent form received from each participant. Table 1 shows the demographic characteristics of the participants. Inclusion criteria included having at least

Table 1: The characteristics of participants

Variable	n
Gender	
Male	28
Female	15
Level of education	
Diploma	3
Bachelor	2
Upper level	38
Position	
Policymakers at the highest levels of government	16
Government middle manager	8
Private middle manager	1
NGOs	2
Health and counseling expert	4
Gynecologist	3
Researcher	2
Faculty	2
Senior Director of International Organization	2
Service users	3

Sample: 43

three years of work experience in cancer management and prevention.

Data collection tool and technique

We conducted semistructured interviews and document analysis for data gathering.

Document analysis includes analysis of related national and international documents and other related subjects searched on valid websites. We consulted with experts to select these sources.

Three in-depth interviews using the pretest interview guide developed by research team, in the first step. The first author (NP) conducted semistructured face-to-face interviews, which lasted between 45 min and 2 h (median = 1:15 min). Interviews continued to expand expression, and saturation was reached after the 18th interview when no new issues emerged. Conversations are then audio-recorded and transcribed.

Data analysis

Interview transcripts were entered in MAXQDA₂₀₂₀ and analyzed the data using the policy triangle framework of Walt and Gilson.^[17]

Ethical consideration

This study was approved by the Specialized Committee on Ethics in Research, School of Management and Medical Information, Iran University of Medical Sciences under the ethical code of IUMS/SHIMS-98-2-37-15630.

Results

The policy analysis triangle has three dimensions:

process, content, and context. The actors are at the center of this framework. In the first part of the findings, the results of the content analysis are presented. The second part is dedicated to the findings obtained from the interviews conducted related to the analysis of stakeholders, the context and policy process of prevention, and early detection of cervical cancer. From the interview analysis, we extracted 9 themes, 15 subthemes, and 36 codes for four dimensions. This information is available in Tables 2 and 3.

Content analysis

Given the word limitations, the documents reviewed in this article included the National Cancer Management Plan 2013–2025, as the newest guidelines in the Iranian Cancer Control Plan have been presented.

“Content” refers to a set of planned goals and actions that make the policies come true. Four objectives, 12 strategies, and 16 programs make up the national cancer management plan for cervical cancer prevention. In addition, 1 goal, 12 strategies, and 16 programs have been considered for early diagnosis.

One of the challenges to prevention strategies was the weak integration of information registration system among universities of medical sciences. Iran’s cancer registration system was established in 2013–2014. Despite the implementation of the “Sib” as a health registration system, some provinces, such as Khorasan and Mazandaran, have separate registration systems. Moreover, the health system suffers from the lack of an integrated health registration system between the private and public sector. It leads to achievable goals for risk factor identification as one of the goals of cancer prevention.

Another challenge was a weakness of public awareness program. According to the context analysis, there is insufficient societal knowledge on early detection and prevention. It’s because of the weaknesses of the educational system in school-based education and public education. These factors will be effective in achieving the goals of education and health promotion in the national cancer management plan.

Poor service coverage was another challenge facing individual health promotion goals. Individual, social, and health system factors all have an impact on improving individual health. On the other hand, external factors such as lack of service access (a health systems factor) and poor health staff communication with service users, as a social challenge in health systems, can lead to poor service access and finally low service coverage.

The fourth weakness found in cervical cancer prevention policies was the weakness of intra- and inter-sector

Table 2: The topics emerged from content analysis of cervical cancer prevention and early diagnosis policies in Iran based on the National Cancer Control Program 2013-2025

Policy	Theme	Subtheme	Code
Prevention	Identification of cancer risk factors based on geographic regions	Weakness of information registration system	Weak integration of information registration system among universities of medical sciences
			Weak communication between health information in the private and public sectors
	Education and health promotion programs	Weakness of public awareness programs	Poor public education programs Poor public knowledge of disease prevention
	Individual Health Promotion	Weakness of service coverage	Poor public awareness Fear of stigma and discrimination Lack of ease of access to facilities Inappropriate behavior of health workers
Early detection	Reducing the burden of cancer risk factors	Weakness of intra- and intersector collaboration	Impact of managers' personal values in improving the awareness of society
			Insufficient participation of high-level managers in developing cancer prevention and control programs
			Poor convergence of instructions
			Insufficient attention to cancer prevention and early detection in upstream documents
Early detection	Providing quality services	Weakness of prescribing management and service standardization	Weakness of standard operating procedures (SOP)
			Low use of HTA capacity
		Weakness of monitoring and evaluation systems	Low integrity of organizational performance
			Shortage of screening facilities
Early detection	Providing quality services	Weakness of service stratification	Weakness in the use of trained human resources
			Nonsystematic monitoring and evaluation systems
Early detection	Providing quality services	Weakness of service stratification	Weakness in implementing outcome-oriented monitoring and evaluation
			Weakness of standard operating procedures (SOP)

Table 3: The main topics extracted from the interviewees based on health policy triangle model

Dimension	Theme	Subtheme	Code
Process analysis	Formulation and evaluation challenges	Weakness of using scientific principles in policy making	Weakness of standard operating procedures (SOP)
		Weakness of monitoring and evaluation systems	Poor utilization of HTA capacity
Context analysis	Structural-managerial challenges	Weakness of organizational and intersectoral structure	Non-systematic monitoring and evaluation systems
		Weakness of executive management	Weakness in implementing outcome-oriented monitoring and evaluation
	Socioeconomic challenges	Culture, religion, and tradition challenges	poor-organized referral system
		Social and economic damage	Weakness of standard operating procedures (SOP)
Stakeholder analysis	Weakness of stakeholders' interest and engagement	Conflict of interest	Low integration of information registration systems
		Decision-making challenges	Weakness of intra- and inter-sector collaboration
			Evidence-informed policy-making challenges
Stakeholder analysis	Weakness of stakeholders' interest and engagement	Decision-making challenges	Taboo of cervical cancer and sexual issues
			Challenges of meritocracy

collaboration. Stakeholder cooperation is one of the important factors in achieving the goal of reducing the burden of cancer risk factors in the National Cancer Management Plan. One of the most important effective factors in a successful plan is the efficient development of its content. In Iran, problems such as the influence of personal

interests and the poor participation of high-ranking managers in guideline development will cause poor convergence of instructions. In addition, the results of other upstream documents reviewed, including the Five-Year Economic, Cultural and Social Development Plan, show insufficient attention to cancer prevention in Iran.

The objectives and challenges of early detection are explained in the following paragraphs. The weakness of prescribing management and service standardization is the first challenge. Iran doesn't have a well-organized referral system, which causes imperfect implementation of the standard operational procedures for referring patients. Human resource training and underutilization of them are also challenges to service standardization. The quality of services may be directly impacted by a shortage of human resources. In Iran, there is still insufficient funding for cancer prevention, even though its importance has been recognized for reducing incidence, prevalence, and death. This issue will be effective in providing screening facilities for the target population. The weakness of monitoring and evaluation systems has been identified as another challenge with early detection strategies. This challenge is also described in detail in process analysis. Evaluation is essential in providing information so that decisions can be changed or new ones can be made. However, the monitoring system is not systematically planned and implemented in Iran. In addition, the supervision is process-based and not outcome-oriented. The last challenge is the weakness in the stratification of health services. The referral system and standard operating procedures (SOP) mentioned above have weaknesses that are causing this challenge.

The following are presented: policy process, the stakeholders, content, and context analysis of prevention and early detection of cervical cancer, which resulted from interviews. From the interview analysis, we extracted 4 themes, 8 subthemes, and 16 codes for 4 dimensions. This information is available in Table 3.

Process analysis

"Process" refers to the roles and activities performed in policy implementation. The subthemes extracted from the dimensions, including the weaknesses of using scientific principles in policy making and the weaknesses of monitoring and evaluation systems, are described below and indicated in Table 3.

Weakness of using scientific principles in policy making

In cervical cancer prevention protocols, adherence to scientific principles in policy making is crucial because it can influence intervention implementation, indicator assessment, and goal evaluation. The following are the recognized challenges in this area.

There is no organized referral system in Iran. Based on Structural-managerial challenges in Table 3, this has impeded the use of SOPs for patient referrals in the design of interventions. One of the executive managers stated: "We are basically having a serious problem in the referral system from one level of the system to another. I'm sure there will be issues if this is done as well" (FP30).

Another statement made by a specialist is as follows: "He/she (the specialist) considers himself superior to the protocol and does not necessarily follow it, therefore we have a rupture in the referral process" (MP24).

The effects of policymakers' knowledge quality and depth are considered the most effective factors influencing policy effectiveness. The capacity of Health Technology Assessment (HTA) is a systematic process that evaluates the properties and impacts of healthcare technologies and interventions, including medical devices, drugs, procedures, and systems, in a transparent, unbiased, and scientifically rigorous manner. HTA plays a crucial role in healthcare systems worldwide, helping to ensure that limited healthcare resources are allocated efficiently and that patients receive the most effective and cost-effective treatments. Most of the Iranians' cost-effectiveness studies are of the modeling study. As a result, it seems that the screening interventions are not based on scientific principles. The results from the economic evaluation of the HPV screening test as a preliminary study have not been published in Iran. However, MoH has been recommending a cervical cancer screening program that combines HPV with Pap smear tests. In contrast, based on WHO recommendations, this screening strategy is not recommended for developing or underdeveloped countries. According to the latest word bank classification, Iran is also included in this category (LMEI). It seems that the current conventional strategies (Pap smear tests) or changes to the VIA test could be the most cost-effective interventions for Iran. One of the administrators of the Ministry of Health said:

"You see, there is no systematic way to look at the benefits and cost-effectiveness of these services. We don't have this, unlike the NHS in the United Kingdom, which does it for little medical or surgical services. The initial assumption is that the insurance will cover it. It is unknown how much it will benefit patients, the healthcare system, and health insurers. We don't have enough pharmacological research or HTA studies on our services" (FP36).

Weakness of monitoring and evaluation systems

Ultimately, challenges in monitoring and evaluation systems have emerged as the latest challenges in the process analysis. Among these, we can highlight nonsystematic monitoring and evaluation systems and weaknesses in implementing outcome-oriented monitoring and evaluation. Notably, the weakness of achieving the program implementation results as obtained in the evaluation could lead to weaknesses in making or modifying decisions. Also, it can waste resources and reduce the quality of staff work. One of the officials of the community health center said:

“For example, in the discussion of result-based management, you can define the percentage of people who should have had a Pap smear test at least once so far. I have to say maybe an obsessive person does 10 tests every 6 months, even if it is not necessary, but then you look at the case of a high-risk person, and you see that she has not done it even once in 10 years. It is not of high quality. Now, it does not matter what the result is” (FP10).

Context analysis

A set of national and international systemic political, economic, and social elements that could impact health policy is referred to as “context.” Iran, officially the Islamic Republic of Iran, is a country in Western Asia. A 2020 survey by the World Values Survey found that 96.6% of Iranians believe in Islam. In 2020, gross domestic product (GDP) was \$ 231.55 billion (\$1.631 trillion at PPP), or \$ 2757 at PPP per capita.^[21] Current health expenditure as percentage of GDP (%) reported 6.71 in 2019.^[22] Also, Iran is ranked as a lower middle-income economy by the World Bank. Three themes and five subthemes are extracted from the codes, which are explained below and mentioned in Table 3.

Weakness of organizational and intersectoral Structure

An organizational structure explains how activities such as task assignment, coordination, and supervision are directed toward the realization of organizational goals. Organizational structure affects organizational performance and provides the foundation for standard operating processes. Intersectoral action is also defined as a recognized correlation between various sectors of the health sector and others to achieve health outcomes in a more efficient and effective way than working alone.^[23] The subset codes for this theme include poor-organized referral system, weakness of SOP, and low integrity of organizational performance as described below.

A health-care referral management system is an effective method for patient data integration. At all stages of the health-care process, health-care providers use this system to successfully interact with consultants, specialists, and patients. There is a poor-organized referral system in Iran. According to the challenges of organizational structure in Table 3, this has weakened the utilization of SOP in the design of interventions. One of the government middle manager stated: “We are basically having a serious problem in the referral system from one level of the system to another. I’m sure if this is also implemented, it will face complications” (FP30). Another statement made by a senior director of international organization is as follows: “He (the specialist) considers himself superior to the protocol and does not necessarily follow it, therefore we have a Separation in the referral process” (MP24).

Based on Table 3 and the challenges related to organizational structure, the weakness of organized referral system could be related to weakness of SOP in Iran. This may cause the poor identification and poor financial support of vulnerable groups and the poor sampling process. In other words, follow-up after taking a sample from the client has not been conducted. The statement of the health staff in community health centers also proves this. “Sampling is conducted for the individual in free centers, but the transfer of the sample to the laboratory and its payment is performed by the client. Therefore, the lam may be damaged during the transfer process” (FP18).

Weakness of executive management

Executive management is in the process of managing the organization to meet the demands of employers, clients, and other stakeholders. It is a process that includes planning, leading, and controlling the organization. The management process involves leadership, motivation, and decision-making. The most important executive management challenges are mentioned in Table 3.

In Iran, the information of the health sector is registered in the information registration system under the name of “Sib system.” However, some provinces have a separate system for recording information. This factor causes some problems such as increasing the workload of personnel in collecting and entering information in the main system (Sib system). On the other hand, the lack of communication between health information in the private and public sectors has also caused problems in this area. “We now have several systems, Sib, Sina, and one system in Mashhad, each of which does its own thing,” (MP22), said the counseling expert. According to the private middle manager’s statement:

“The lack of a national registration system for communication between laboratories, the private sector, clinics, and comprehensive health service centers has led to a lack of integration in information registration systems. Also, due to the lack of software and information registration system similar to the Sib system in government or the private sector, information is not properly transmitted to the Ministry of Health” (MP20).

Intra-sectoral collaboration consists of different sub processes and activities that take place concurrently or consecutively within an organization between its various subsystems and departments or agents. In contrast, intersectoral cooperation is defined as collaborative approaches, which can involve various ministries, government agencies, nongovernmental organizations, relevant stakeholders, and other groups, with the unified goal of addressing a specific concern. The following are mentioned in the extracted codes.

Despite their high potential in policy making and program implementation, some organizations do not use their influence to achieve collaboration with stakeholders. The counseling expert' statements regarding these subjects are given below.

"Even though the State Welfare Organization of Iran has a direct relationship and the potential to identify vulnerable groups, it has insufficient cooperation in cervical cancer control. Perhaps this weak cooperation is because of inadequate resources or the deficiency of a defined communication channel with other organizations" (MP22).

Other MoH deputies' remarks are also mentioned below. "The Ministry of Education can help fight this disease due to its wide resources. But it does not do it. It could be due to a lack of interest, a refusal to express STDs as a result of Iran's religious and political context, or poor management of available resources" (MP23).

Weaknesses of training and employment are other weaknesses in executive management. According to the participants, there is little agreement between the university education and the knowledge required in the workplace. This factor can affect the quality of service. The idea of one of the employees of the Community Health Center is as follows:

"Let's have a course at the university, for example, a health care course where the student who enters the university can study these concepts in order to finally become a capable professional. The student has to read hundreds of instructions in order to be able to perform them, which is not really possible; thus, it reduces the quality of care" (FP11). "At the Ministry of Health, we do not actually train the Deputy Chief of Staff for the Ministry of Health. At the hospital, our universities do not train doctors to serve in primary health care. Now Dr. Barshun is teaching them national protocols, Harrison" (MP14), said one of the faculties.

Culture, religion, and tradition challenges

Culture is the social behavior, institutions, and norms that exist in humans, as well as the knowledge, beliefs, arts, laws, customs, abilities, and habits of individuals. A sociocultural system that generates values, beliefs, ideologies, or ethics is generally referred to as a religion. Tradition can also be defined as the transmission of knowledge, convictions, or traditions from one generation to the next. This subtheme is extracted from two codes, including the taboo of cervical cancer and sexual issues, and the effect of the accumulation of cultural deprivations, which is explained below.

The distinction between cervical cancer and other cancers is that STDs in Iran are socially, morally, and legally

unacceptable. Therefore, identifying high-risk groups is often difficult. Due to cultural problems, despite the good acceptability of prevention facilities in comprehensive health centers, their utilization will be constrained. This factor could reduce the screening coverage rate. Some studies indicate that low screening coverage has an effect on reducing the cost-effectiveness of screening interventions.^[24,25] One of the MoH' administrators said: "Among the reasons for low screening coverage are women's low knowledge of testing engagement, concerns about stigma and discrimination, and difficult and inappropriate access to receiving services for employed people. In addition, high-risk groups, due to the stigma and taboo of infection (meaning HPV) and the inappropriate behavior of some health workers, may not have enough motivation to receive services, or even don't know about the availability of such services" (FP36).

Cultural differences in different societies and the lack of effective communication between parents and children can lead to failure in health education programs. Another issue related to cultural, religious, and traditional issues is the impact of the accumulation of cultural deprivations. "A teenage girl, a middle school girl, and a high school girl can't even talk to their mother. Or their health teachers have to plan for these children to differentiate between a doctor and a healthy body with immoral and abnormal behaviors. But they know some things and discriminate between the two. Unfortunately, our society only advances one aspect of the Physical and Mental Health, and no plan has been devised of at all" (MP19), said a gynecologist.

Social and economic damage

How well and how long we live can be greatly influenced by social and economic factors, including income, education, occupation, community protection, and social support. These factors have an impact on our capacity to make health decisions, pay for housing and health care, control stress, and others. We found three codes, namely, weakness of public awareness, weakness of financial support for vulnerable groups, and the effect of financial deprivation on the disease prevalence. The three codes are discussed below.

The level of public awareness in the use of services plays an important role in the coverage of screening programs. According to Table 2, the results of the public awareness about cervical cancer prevention programs indicate the weakness of public education programs. However, the statements of some employees at the service level indicate that the level of public awareness of community services is appropriate and contradicts the statements of other officials and clients about the inadequacy of public education programs. One of the officials said: "In this situation, if I want to do HPV, HPV Pap smear

test, there is no insurance coverage at all. The Ministry of Health say that the insurance company has to cover screening programs. However, insurance companies do not accept this. I, as a woman in this country, should be informed" (FP40). In contrast, others' community health centers' staff said: "Prevention, which they themselves have known for a long time, is not necessary to awareness. The Iranian people also know that Pap smear is used for prevention or early diagnosis" (MP42).

Findings related to social and economic damage, it seems, the weakness of financial support from vulnerable groups will reduce the access of high-risk groups to services. This can be attributed to the weakness of insurance systems. The statements made by the officials of the social security of insurance companies are as follows: "In the case of Pap smear insurance coverage, laboratory costs are paid by the individual, and there is no financial support for the underprivileged" (MP6).

Stakeholder analysis

Today, humans are an important component of organizational development. The growth and development of organizations depend on the correct use of effective human resource management. "Stakeholders" are a group of individuals and organizations involved in or influenced by the implementation process. Due to the multifactorial nature of cervical cancer, several stakeholders are involved in the development of policies. Although some stakeholders have good potential, they show a passive role in policy implementation. The following are details of the stakeholders with potential impacts on cervical cancer prevention.

MoH is one of the main stakeholders in the development of cancer control policies in Iran. The Center for Noncommunicable Disease Management and its cancer office are the main stewardships for cervical cancer prevention. Other stakeholders in cervical cancer prevention include gynecologists, insurance organizations (Social Security Organization and Iran Health Insurance Organization), the Ministry of Welfare, the MoH's Health Reference Laboratory, the Cancer Institute of Iran, the Iranian Academy of Medical Sciences, the Iranian Society of Gynecology Oncology, and private clinics.

Based on the obtained information, different stakeholders had varying levels of participation, from low to high. It found that some stakeholders, despite their significant impact on cancer prevention, do not have organized participation. The Ministry of Education; the Ministry of Cooperatives, Labor, and Social Welfare; the Interior Ministry; the Ministry of Sport and Youth; the Islamic Consultative Assembly; the Parliament Research Center; the Expediency Discernment Council; and the Islamic

Republic of Iran Broadcasting could be mentioned among them. The organizations' participation, such as the Planning and Budget Organization; the Food and Drug Administration of Iran; the State Welfare Organization of Iran; the municipalities; and the governorates, requires improvement. Eventually, the activities of some organizations like the MoH's Health Reference Laboratory; the Cancer Institute of Iran; the Insurance Organizations; the Iranian Academy of Medical Sciences; and the IRSGO, which have sufficient participation, should also be maintained. Some offices in the municipality's Social and Cultural Affairs Department (subsets of the municipality) could use their initiatives to promote women's health. Some of these include the General Health Office; the Civilization Office; the Women's Department of the Municipality; the social and cultural deputy; and the Welfare, Services and Social Participation Organization. Furthermore, the activities of the Organization for Defending Victims of Violence (NGO) alongside the State Welfare Organization of Iran (a subset of the Ministry of Cooperatives, Labor, and Social Welfare) are also related to women's health. Combining the capacity of these offices can have a significant impact on identifying and training vulnerable women.

The following will discuss the challenges of stakeholder analysis from interviews; obtained themes including conflict of interest and decision-making challenges. A summary of the themes, subthemes, and codes listed in Table 3.

Conflict of interest

A conflict of interest defines an individual or organization as involved in multiple interests, financial, or other interests, in such a way that serving one interest could involve working against another. Types of screening tests can affect the quality and frequency of services provided. In addition, the poor dissociation between policy making and resource generation and the different interests between policymakers and managers in decision-making can exacerbate this conflict of interest.

The new screening approach has a low price which would negatively affect the cooperation of gynecologists or midwives. Government managers said, "You should consider the profit. Previously performed several tests on the woman. That is why they non-cooperate" (MP16).

The poor dissociation between stewardship and resource generation and provider financial incentives had the highest score in terms of conflict of interest. The following are the statements of the faculty in this regard: "The service provider and the service policymakers are the same; that is, the Ministry of Health is both purchasing services and *making policy*" (FP14). In addition, according to the gynecologist:

“No doubt, this creates a conflict of interest. Let me give a simple example; it seems logical for me as a gynecologist or a private laboratory to resist a new test about which I do not have enough information or adequate test equipment” (FP15).

Decision-making challenges

Other findings related to stakeholder challenges are decision-making challenges. Codes include evidence-informed policy-making challenges and challenges of meritocracy, as described below.

The quality and depth of knowledge used by policymakers affected policy effectiveness. The executive manager’s statements indicate the weakness of the evidence-based policy, which is as follows:

“The administrative cost of Pap smears, performed tests along with insurance covered by the government, is so expensive compared to the HPV cost. Regarding costs, being a more important criterion than effectiveness in making decisions, it does not matter if we use local or international evidence to determine the effectiveness of the test!!!” (MP28).

One of the issues related to decision-making is the poor balance between the training capacity of the workforce (specifically for midwives) and employing them, which is contrary to meritocracy, which affects the creation of excess workforce capacity and waste of financial resources. According to some faculties, “We are training specialists and midwives are not well distributed. We have come to a large work market where the health workforce is moving towards employment in the non-health sector” (FP17).

Another participant as a researcher said: “EU countries have about 10 to 35 per 10,000 gynecologists, but we have about 71, which is 2.5 times higher” (MP7). Considering the physician-centered perspective in Iran, this estimated training affects the professionalism challenge (mentioned in process analysis, as governance challenges).

Discussion

Cervical cancer mortality has decreased dramatically in high-income countries due to widespread screening.^[3] Because low- and middle-income countries lack a well-organized screening program, patients with cervical cancer are frequently diagnosed at an advanced stage.^[26]

Iran is classified as a lower middle income country and is officially the Islamic Republic of Iran, located in Western Asia. The National Cervical Cancer Screening Program in Iran was implemented by the Ministry of Health and Medical Education in 1989. This program

includes a Pap smear test for women at the screening age of 20–65 after the first sexual activity, at 3-year intervals. However, due to the inefficiency of the program in 1990, the cervical cancer screening program was changed from population-based screening to opportunistic-based screening. Iran’s health system does not yet have an organized screening program, despite the incidence of cervical cancer rising to double by 2040 compared to current rates. Cervical cancer is still a health problem in Iran. Therefore, this study is aimed at policy analysis of cervical cancer prevention and early detection in Iran. As a result, based on the health triangle model, we obtained 9 themes and 15 subthemes from extracted 36 codes. The most important challenges can be mentioned as low screening coverage; inadequate knowledge, awareness, and education about cervical cancer; and the economic problems of implementing a new screening strategy (i.e., HPV testing and vaccination). Following are the details of these challenges, along with some more.

Developing appropriate guidelines is one of the most important factors in the successful implementation of programs. In our research, the most important challenges related to content analysis are weaknesses in applying scientific principles in policy making, including weaknesses in SOP, and low use of HTA capacity in developed guidelines. The study findings conducted by Karin *et al.* also showed challenges related to operational research, such as effectiveness and qualitative research on cervical cancer prevention programs.^[27]

Analyzing the process analysis could provide a macro picture of policy making, from design to implementation. The insufficiency of connections between problem and policy streams with political streams has caused weakness in the implementation of cervical cancer prevention and early detection policies. A program’s ability to produce adequate and accurate results to reform decision-making and general policies will suffer from a weakness of outcome-based evaluations. Numerous studies have demonstrated challenges in technical and research-related registration, monitoring, and evaluation systems following the implementation of programs.^[27-30]

Economic problems, public awareness challenges, and the weakness of SOP, followed by a poorly organized referral system, were ranked higher among the challenges in the context analysis. Economic factors are one of the most important factors in agenda setting and policy making. It can have an impact on the achievement of an organization’s goals. WHO has also shown weaknesses in financial mechanisms in policy making.^[20,28,31-33] Moreover, study findings by Moore *et al.* showed that changing risk factors for cancer can be influenced by economic development.^[34] Other studies have found that the kind of

screening strategy has an impact on the rate of screening coverage. Our interviewees' responses confirm Wang *et al.*'s^[35] findings that financial resources significantly influence the choice of new screening procedures. Additionally, insufficient public knowledge has been reported in some studies.^[30,32,36-45] The results of some studies show that cultural and social issues, including insufficient public knowledge of screening facilities, play an important role in screening coverage rates.^[27,28,32,41,42,46-52] Also, a study conducted by Malekzadeh *et al.*^[53] reported that evidence-based information communicated between consumers and clinicians has a significant role in consumers' health-related behavior. These factors could be the impact of cervical cancer screening programs on reducing cervical cancer incidence and mortality.^[3,54] One study conducted in Kenya reported several challenges in the referral system, including infrastructure, health information systems, capacity for health-care workers, and financial resources.^[55] Another study's findings reported several challenges, including lack of referral transportation, poor communication, lack of referral guidelines, shortage of skilled personnel, and lack of diagnostic tools, and drugs that led to self-referral. Also, the lack of communication between the services' workers, lack of knowledge regarding the services in the network, lack of continuing education, the weakness of feedback between primary and secondary services, and the lack of responsibility of the professionals involved in the care were identified in the South of Brazil related to referral system challenges.^[56]

Conflicts of interest and decision-making issues are the most significant challenges in stakeholder analysis. The study by Bayrami *et al.*^[28] shows similar results. Furthermore, many studies have shown governance challenges and challenges in implementing cancer prevention programs. Some of these factors include low stakeholder engagement, inadequate knowledge of at-risk groups, insufficient reporting and feedback between administrators and service providers, and inadequate access to screening data for planning.^[28,50,57,58]

Given the bow challenges, the following solutions are recommended.

Utilizing alliance capacity, such as the Global Alliance for Vaccines and Immunizations (GAVI) and Membership in some purchasing programs (e.g., Extended Middle East and North Africa) to strengthen the purchasing power related to implement new screening interventions^[31-33,59]; improving public knowledge and awareness about cancer prevention programs through behavior change models^[30,32,36-44]; and creating a structure for the involvement of various stakeholders, such as teachers, parents, and local partners, to ensure program success.^[58]

Other specific recommendations for Iranian health care include revising guidelines of cervical cancer control with the aim of changing screening strategies from pap smear to VIA considering the fall of Iran's economic ranking to low-middle income economics, launching the HPV vaccination program according to the results of economic evaluation studies, utilizing structures to sustain the preventative program, such as the Supreme Planning Council incorporated into the Supreme Council of Health and Food Security in the MoH. This structure could be utilized to establish school-based education and improve public awareness of cancer risk factors. This intervention affects health literacy improvement and will lead to an increase in screening coverage, followed by a decrease in cervical cancer incidence and mortality.

Limitation and Recommendation

A snowballing approach was applied to select participants. One of the challenges of this approach is that it starts with the purposeful selection of participants, which can affect the bias of the results. To overcome these limitations, we considered criteria such as occupations, experiences, and perspectives. Because of The "COVID-19 pandemic" refers to the global outbreak and widespread spread of the Coronavirus Disease 2019 (COVID-19). It signifies the formal and ongoing worldwide health crisis caused by the SARS-CoV-2 virus, leading to a broad range of social, economic, and healthcare challenges, another limitation of this study was the data gathering using online interviews. Despite the great participation of the respondents, this condition impacted the interview duration and, as a result, the quality of information. Also, the research findings are specific to Iran and may not be generalized to other countries. However, identifying the challenges of prevention and early detection policies for cervical cancer may help to apply these outcomes to other contexts with comparable dynamics.

The recommended solutions can be used by health policymakers and decision-makers to effectively administer health services. It seems that implementing more effective evidence-informed decision-making is facilitated by conducting systematic review studies based on nations where comparable economic income levels help to implement more efficient programs.

Conclusion

Despite advances in cancer screening, cervical cancer remains a health problem in the Iranian female population. A wide range of economic, social, and cultural problems can affect cervical cancer prevention policies. Several strategies are suggested to overcome these challenges, including allocating separate funds to cancer prevention programs, using structures to sustain

prevention programs, designing and using them to raise public awareness, educating women to improve their participation in screening programs, and changing the style of college education focused on improving self-care skills. The recommendation can be used by health policymakers and decision-makers to effectively administer health services.

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Ethical considerations

The study was done after holding the ethical code of IUMS/SHIMS-98-2-37-15630 from the Specialized Committee on Ethics in Research, School of Management and Medical Information, Iran University of Medical Sciences. Written informed consent was obtained from all study participants and all methods are performed in accordance with the relevant guidelines and regulations.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. The interviewees understand that their names and initials will not be published and due efforts will be made to conceal their identity.

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Conflicts of interest

There are no conflicts of interest.

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