Development, implementation, and evaluation of a program to expand the nurse's roles in colorectal cancer prevention: A mixed-methods protocol study

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Abstract:

BACKGROUND: Nurses play an important role in cancer prevention. However, studies conducted on nurses' roles, in the field of cancer prevention in Iran, are very limited. This study will identify the role of nurses and designs, implements, and evaluates a program to expand their role in the prevention of colorectal cancer (CRC).

MATERIALS AND METHODS: This exploratory mixed-methods study will be performed using quantitative–qualitative methods in three consecutive stages. In the first phase, a qualitative study will be conducted to identify the potential and actual roles of nurses in Iran using in-depth semi-structured interviews. Participants will be selected by purposive and snowball sampling, followed by a literature review; the actual and potential roles of nurses at the primary, secondary, and tertiary levels of CRC prevention in Iran and around the world will be extracted. And the actual role is determined. In the second phase, the roles of nurses will be prioritized using the modified Delphi method, and the program will be designed. In the third phase, the part of the program will be implemented as a quasi-experimental intervention, and the effect of the intervention will be evaluated.

CONCLUSION: Developing a program can provide some evidence for promoting nurses' position in cancer prevention. Moreover, it is expected that this program promotes knowledge and empowerment and the position of nurses to provide primary, secondary, and tertiary cancer prevention. The entry of nurses into the field of cancer prevention leads to better quality care and more cost-effectiveness.

Keywords:

Colorectal neoplasms, nurse, prevention, role

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Introduction

Cancer continues to be a major cause of death worldwide, and what makes cancer a health problem is the growing number of people with this disease.[1] Colorectal cancer (CRC) is the third most common malignancy in the world, with a global prevalence of 4.4% and a mortality rate of 3.7% in 2018, according to the World Health Organization (WHO) statistics. In Iran, this cancer ranks third with a prevalence of 9%.[2] Lack of knowledge and access to preventive measures such as screening training has led to increased cancer rates and long-term hospitalization, and financial burden on the health care system.[3] Nurses, as a member of the health care team, have a key role in promoting health and preventing disease, but in primary cancer care in different parts of the world, nursing positions, roles, and challenges in prevention are generally not well defined and there is no standard plan for doing so.[4] In Iran, for example,

nurses provide most of the services in the hospital at the patient's bedside, and their vacancy in other levels of prevention and the community seems empty.[5]

Besides, the Islamic Republic of Iran has presented short-term and long-term programs in the framework of the 2025 program, in various fields of research, education, and the provision of health and medical services. It is mentioned in this plan that by 2025, the nursing graduates of the community health should be able to respond to the needs of the changing society in Iran[6]; however, over time, nurses were tended to play a role in different levels of prevention. For example, oncology nurses around the world are the key members of health care at all levels of cancer prevention and diagnosis, including end-of-life care, but in various guidelines for cancer prevention and screening in Iran the specific role of the nurse is not defined and in general, there is no oncology nurse.[7]

However, on the one hand various studies have emphasized the positive impact of nurses in providing prevention activities, cancer early detection and screening.[8,9] but, despite the unique position of nurses in the cancer prevention program, no study has been conducted to explain their roles in all types of cancer in Iran, and the role of nurses in preventive care, in Iran, still remains in a state of ambiguity. On the other hand, in the limited studies conducted in Iran about the challenges of cancer prevention, the role of nurses to promote health and disease prevention and the need for nurses' presence in the cancer prevention field has been emphasized.[10-12]

Objective

Considering the personal experience of researchers in the field of cancer studies and in terms of the ambiguity of the role of nurses to provide cancer-related care at various levels of prevention in Iran and the lack of a cancer prevention care program for the nursing profession, this study aims to develop, implement and evaluate a program to expand the nurse's roles in CRC prevention.

Materials and Methods

Study design: This is a sequential exploratory mixed-methods study based on the paradigm of pragmatism. It will include qualitative and quantitative steps. This study will be conducted in three phases to find nurses' roles in three levels of CRC prevention based on the educational level (BSN, MSC, Ph.D.) and then prioritize them and finally design a program to expand the role of nurses in the prevention of this cancer [Table 1]. Team members will try to achieve a deeper understanding of nurses' roles by conducting a qualitative study because studies are limited in Iran, so the qualitative step will have more priority. The results of qualitative and quantitative phases will be integrated to design the program.

Ethical consideration: This protocol study is part of a dissertation entitled "design and implementation of a program to expand the role of nurses in the prevention of Colorectal cancer (CRC): A mix methods study" that was approved by the ethics committee of Isfahan University of Medical Sciences (IR.MUI.NUREMA.REC.1400.046). Written informed consent will be obtained from all participants in the qualitative, development and implementation phase of the study. All participants will be informed that they can withdraw from the study anytime. In the use of textbooks and literature in the review phase of the study, utmost care and compliance with the principles of literary rights and preserving trust will be done in translating the materials into the Persian language by mentioning the references.

Phase 1

Study design and setting – qualitative study: A qualitative study will be conducted to analyze the nurse's situation in the community, to determine the actual and potential roles of nurses based on their degree, and to identify barriers and facilities for playing their roles. The study setting includes selected centers of cancer treatment, health and treatment deputy, Office of Non-Communicable Diseases, and Cancer Department of the Ministry of Health and Medical Education. The participants will determine the place, time, and duration of the interview.

Study participants and sampling: Purposive and snowball sampling methods will select participants, and interviews will continue until data saturation. They are mainly oncology nurses. Moreover, other health service

Table 1: Summary of phases of the protocol study, goals, and methods used in each phase

Study phase	Goals	Method
Determining the nurses' roles in CRC	Identifying the roles and positions of nurses in the prevention of CRC in Iran and the world	Qualitative study Literature review
Designing the CRC prevention program	Prioritize nurses' roles in CRC prevention from the perspective of experts and develop the program to expand the role of nurses in CRC prevention	Modified Delphi technique
CRC prevention program implementation and evaluation	Implementation of the designed program at a micro-level	A quasi-experimental study with equivalent group design

providers, including an oncologist, nursing managers, social medicine specialists, CRC patients and their families may be interviewed to further understand the actual and potential nurse's roles.

Inclusion criteria
a. Oncology nurses
   Desire to participate in the study
   Should have worked for at least 6 months in adult cancer wards
b. Health care providers
   Desire to participate in the study
   Should have experience in the prevention and CRC

Exclusion criteria
   Reluctance to continue cooperation
   Withdrawal from the study at any stage of the research

Data collection tool and technique: After getting approved by the ethics committee and explaining research objectives for participants, and taking informed written consent to participate in the study, data will be gathered via semi-structured individual interviews using interview guide questions. Guiding questions will be extracted from the relevant literature [Table 2], and the interviews will be continued until data saturation.

Analyzing qualitative data

Data will be analyzed with a descriptive–exploratory qualitative approach. In the present study, the researcher will use the approach of Strauss and Corbin. The algorithm proposed by Strauss and Corbin consists of three stages of open, axial, and selective coding, which is based on a descriptive–exploratory approach, only two stages of open and axial coding will be used.[13] MAXQDA 10 software will be used to manage the data.
a. Open coding: Open coding, called initial coding, is the first step in analyzing the data. The data will be broken into its smallest semantic unit, the initial classified concepts will be the result of this step. In open coding, one can use the words of the participants themselves or the words that the researcher develops by processing the latent concept.[14]
b. Axial coding: In axial coding, the main data will be classified, and the information are reconnected with each other in a new way, which requires constant data comparison. At this stage, the initial codes and groups will be compared and the codes, which are conceptually similar to each other, will be merged and placed around a common axis that is more conceptually abstract.[14] The interviews will be coded based on nurses' roles in different levels of prevention and role-playing barriers and facilities. Moreover, categories will be determined based on the nurses' roles in previous research studies.

Trustworthiness of qualitative data

The criteria proposed by Goba and Lincoln in 1985 are often regarded as the gold standard for qualitative studies. These researchers propose four criteria, including credibility, dependability, conformability, and transferability.[14] For increasing creditability, conducting in-depth interviews on samples with maximum variety, combining several methods of data collection, peer debriefing and member check will be used. For dependability, researchers will try to explain the path of research, data analysis, coding and related results clearly and in detail, and even provide examples of how to codify, reach categories and excerpts from the text of interviews for each category. Furthermore, the researchers will try to increase the transferability, by clearly, accurately, and purposefully describing the research process, steps, and characteristics of the study population to follow the research path and evaluate the applicability of study data to others.

Literature review: In this phase, searching multiple electronic databases will be conducted, including: Ovid, The Cochrane Library, Science Direct, PubMed, Scopus, Springer, ProQuest, EMBASE, CINAHL, ISC and Web

Table 2: Interview guide

Participants	Sample Questions
Patients	Who did you refer to check your general health before being diagnosed?
	Have you been in contact with the health care providers of your health center? If yes, what would they do for you? If not, why were you not relevant?
	How did you find out about your disease?
	Do you think you would have noticed the disease sooner if there were any facilities available?
	Where your first point of contact with the nurse was and what did she do for you? What were your expectations from the nurse during the diagnosis and treatment in which the nurse could play a role?
	After being discharged from the hospital, what were your expectations of the role that the nurse could play?
Oncology nurses, oncologists, nursing managers, social medicine specialists	What do you know about the different levels of CRC prevention?
	What roles can nurses play at different levels of CRC prevention?
	What are the factors that prevent nurses from playing an effective role in CRC prevention?
	What are the advantages of having nurses to prevent CRC?
	Where nurses can play their roles to prevent CRC?

of sciences. The review process will begin with the extraction of related keywords by using Mesh, Snomed, Embase, and other related texts including "Primary prevention", and "Secondary prevention" and "Tertiary prevention" and "Colorectal Neoplasm" and "Nurse". Persian databases like Magiran, SID, IranDoc and Noormags will be searched with the Persian keywords for the related articles from ab initio until 2021.

Inclusion criteria
  a. FulFull-textailability (quantitative, qualitative and mixed methods), review articles, book reviews
  b. Articles published from ab to 2021
  c. Articles are published in English or Persian languages

Exclusion criteria
  a. Abstracts, short communications, letters to the editors
  b. Articles without having access to their full text

Phase 2 – Developing the program to expand the role of nurses in CRC prevention

The program will be developed using Ewles and Simnett's designing pattern, including determining and prioritizing roles, explaining the aims and objectives, the mission of the program, selecting the best strategy to achieve goals, identifying resources, and designing evaluation methods and setting an action plan.[15] This phase will be carried out to design a program based on prioritizing nurses' roles.

The modified Delphi technique will be used to obtain the opinions of experts about the priority of nurses' roles. After analyzing the qualitative data and literature review and identifying the nurses' roles, the researcher will prepare a list and present it in the form of a questionnaire to the expert members to perform the Delphi technique. The members of the expert group include oncology nurses, oncologists, nursing managers, the staff of the Health and Cancer Unit of the Ministry of Health, and medical education. The number of participants in this stage will be determined at least ten.[16] Then, the list of roles in terms of importance (which is rated as Likert from very important 5 to unimportant 1), necessity (somewhat unnecessary, somewhat necessary to absolutely necessary), feasibility (very low, to too much), places where nurses can play these roles and prerequisites for the extension of nurses' preventive role will be prepared. Then, expert groups will discuss the roles and prerequisites and will also present their suggestions. Once the priority roles and prerequisites were identified, the initial draft of the CRC prevention program for nurses will be developed. Then, the initial plan will be sent via email to the same specialists participating in the panel meeting, and after receiving the experts' suggestions, the necessary corrections will be made and the development of CRC prevention program will be finalized.

Phase 3 program implementation and evaluation

Study design and setting: To determine the effectiveness part of the program focuses on the extension of nurses' roles in CRC prevention, a pretest–posttest quasi-experimental design will be implemented.

Study participants and sampling: All oncology nurses will be included and selected using convenient sampling.

Exclusion criteria
Reluctance to collaborate at any stage of research

Data collection tool and technique: After receiving the ethical code from the ethics committee, the researcher will go to the research environment. The oncology nurses who met the inclusion criteria will randomly assign to control or intervention groups after taking written informed consent. Nearly 30 oncology nurses will be assigned to each group based on a sample size formula and potentially a 10% sample reduction. After determining the type of intervention, the intervention will be implemented, and the control group will not receive any intervention, a similar package will be provided for the control group after completing the intervention. The impact of the intervention will be evaluated using the standard questionnaires and will be completed by both groups, before and after the intervention. The tools will be used to collect information including a demographic questionnaire and in accordance with the type of intervention performed other valid and reliable questionnaires will be used to evaluate the effectiveness of the intervention.

Statistical analysis
Data analysis will be performed using the Statistical Package for Social Sciences (SPSS) 22 software. Descriptive statistics will be used to determine the demographic characteristics of participants and the analysis of variances will be employed to compare participants' preparation in both intervention and control groups.

Discussion

Since the role of nurses at different levels of CRC prevention has not been studied and there are no programs to fulfill their role, conducting a sequential exploratory study and developing a program can be a useful step in this regard. This program will be the basis for expanding the nurse's role from the community to palliative care, rehabilitation, home care, and hospice care. Various studies have shown

that different types of nurses, including nurses working in different medical centers, community health nurses, occupational health, and school health nurses, are in the best position to provide cancer prevention education.[5,17] Playing the role of nurses at different levels of cancer prevention is safe and more cost-effective and leads to faster recovery and increased quality of life in patients with CRC.[18,19]

Also, according to the definition of nurses' job positions in different fields of treatment, rehabilitation, palliative care, and society in the approved curriculum of nursing and the lack of definition of nurses' position in the IRAPEN (Package of Essential Non-communicable Disease Iran) program, the Ministry of Health and Medical Education and other related institutions can use the results of this study in policy-making and planning to promote their role in the country and to employ more nursing staff and help prevent nurses from leaving the country. The use of nurses helps policymakers in various areas of health care to help reduce the incidence of CRC and reduce the length of hospital stay and increase the life expectancy of patients. In addition, the findings of this study may support policy development curricula aimed at developing a preventive and empowering role for nurses. In addition, it is impossible not to mention the reduction of the financial burden on the family and the health system when the presence of nurses is present. Educational authorities can plan training workshops to use the prevention nurse program to increase the knowledge and skills of different groups (including staff, students and nursing professors). Besides, the research findings can give this change of view to the officials of the system and organization involved in nursing education that nurses in addition to caring patients in hospitals, have the ability to provide services in other levels of prevention, the presence of a cancer prevention nurse at all levels to patients and their family helps gain knowledge, motivation and confidence to manage the disease. Lack of Persian resources and lack of access to some foreign databases and unwillingness or lack of access to some identified individuals for interviews are among the potential limitations of this study.

Conclusion

The study results will provide a better understanding of nurses' roles in CRC prevention and develop a program to expanding their roles. It can subsequently lead to providing CRC prevention strategies for nurses.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflicts of interest

There are no conflicts of interest.

References

1. Delam H, Izanloo S, Bazrafshan M-R, Eidi A-R. Risk factors for cervical cancer: An epidemiological review. J Health Sci Surveill Syst 2020;8:105-9.
2. Cancer country profiles 2020. 2020. Available from: https://www.who.int/cancer/country-profiles/IRN_2020.pdf?ua=1.
3. Chigbu CO, Aniebue U. Why southeastern Nigerian women who are aware of cervical cancer screening do not go for cervical cancer screening. Int J Gynecol Cancer 2011;21:1282-6.
4. Long J, Shah J. Engaging more nurses in cancer preventive care: Challenges and opportunities. J Healthc Manag 2018;63:261-8.
5. Heydari H, Rahnavard Z, Ghaffari F. Exploring the position of community-based nursing in Iran: A qualitative study. Int J Community Based Nurs Midwifery 2017;5:386-96.
6. Jamshidi Z, Sadeghi H. Nursing challenges and barriers to promotion health community: Narrative review. Iran J Syst Rev Med Sci 2020;1:20-9.
7. Yamani N, Taleghani F, Alizadeh M, Khabaz-Mafinejad M. Determining the expected competencies for oncology nursing: a needs assessment study. Iranian Journal of Nursing and Midwifery Research. 2018;23:188.
8. McIlfatrick S, Keeney S, McKenna H, McCarley N, McIlwee G. Exploring the actual and potential role of the primary care nurse in the prevention of cancer: A mixed methods study. Eur J Cancer Care 2014;23:288-99.
9. Melo FBB, Marques CAV, da Silva Rosa A, de Figueiredo EN, de Gutiérrez MGR. Actions of nurses in early detection of breast cancer. Rev Bras Enferm 2017;70:1119-28.
10. Bayrami R, Taghipour A, Ebrahimipour H. Challenges of providing cervical cancer prevention programs in Iran: A qualitative study. Asian Pac J Cancer Prev 2014;15:10071-7.
11. Sharifikia I, Rohani C, Estebsari F, Salmani F, Matbouei M, Hossein-nejad A, *et al*. Awareness about warning signs for cancers in women referred to health centers affiliated with bushehr university of medical sciences. Iran J Cancer Nurs 2019;1:30-9.
12. Yamani N, Taleghani F, Alizadeh M, Khabaz-Mafinejad M. Determining the expected competencies for oncology nursing: A needs assessment study. Iran J Nurs Midwifery Res 2018;23:188-92.
13. Corbin J, Strauss A. Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. London: Sage Publications; 2014. p. 215-56.

14. Polit DF, Beck CT. Nursing Research: Generating and Assessing Evidence for Nursing Practice. Lippincott Williams & Wilkins; 2017. p. 748-83

15. Berahmandpur F. A Guide to Planning and Evaluating Health Promotion Projects. Tehran: The Ministry of Health and Medical Education; 2012. p. 12-5.

16. Kennedy A. Nurse preceptors and preceptor education: Implications for preceptor programs, retention strategies, and managerial support. Medsurg Nurs 2019;28:107-13.

17. Temucin E, Nahcivan NO. Effect of nurse navigation program on colorectal cancer screening behaviour of the individuals aged 50-70. J Cancer Educ 2018;35:112-24.

18. Qaderi S, Swartjes H, Custers J, de Wilt J. Health care provider and patient preparedness for alternative colorectal cancer follow-up; a review. Eur J Surg Oncol 2020;46:1779-88.

19. Williamson S, Chalmers K, Beaver K. Patient experiences of nurse-led telephone follow-up following treatment for colorectal cancer. Eur J Oncol Nurs 2015;19:237-43.