

Assessment Of Public Awareness Of Breast Cancer Symptoms And Screening In Several Regions Of Uzbekistan

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Abstract: Breast cancer occupies a leading position in the structure of female oncological morbidity worldwide and remains one of the most significant public health challenges due to its high incidence, late detection, and associated mortality. Early diagnosis of breast cancer largely depends on women's awareness of initial symptoms, risk factors, and the availability and importance of regular screening methods. In many developing and middle-income countries, including Uzbekistan, insufficient awareness and limited access to preventive services contribute to delayed diagnosis and poorer outcomes. The analysis of the collected data revealed a generally low level of awareness regarding early symptoms of breast cancer and insufficient understanding of effective screening methods. Poor adherence to regular preventive examinations was particularly pronounced among women residing in rural areas, which may be associated with limited access to healthcare services, lower health literacy, and socio-cultural factors. The aim of this study was to assess the level of public awareness of breast cancer symptoms, early warning signs, and screening methods among women living in several regions of Uzbekistan. A cross-sectional questionnaire survey was conducted among women of reproductive and post-reproductive age who attended primary healthcare facilities. The questionnaire included questions related to knowledge of breast cancer risk factors, recognition of early clinical manifestations, attitudes toward self-examination, and participation in screening programs such as clinical breast examination and mammography.

Keywords: Breast cancer, early detection, awareness, screening, self-examination, mammography, risk factors, Uzbekistan, women's health, public health.

Introduction: Breast cancer remains one of the most pressing medical and social problems in modern healthcare and occupies a leading position among malignant neoplasms in women. Despite advances in diagnostic and therapeutic technologies, the mortality rate from this disease remains high, largely due to late

detection of the pathological process [1, 2].

As shown in the study by A. T. Xudaikulov and T. M. Palvanov (2015), conducted among women in the Xorezm region of Uzbekistan, awareness of breast cancer, its warning signs, and effective screening methods remains insufficient. The authors emphasize

that limited knowledge of early clinical signs and irregular participation in preventive examinations significantly reduce the possibilities for early diagnosis [9].

Awareness of screening methods such as breast self-examination, clinical examination, and mammography plays a particularly important role in breast cancer prevention. However, according to Xudaikulov and Palvanov, most surveyed women either lack self-examination skills or do not recognize its diagnostic value, highlighting the need for systematic educational efforts [9]. At the same time, data on public awareness in other regions of Uzbekistan remain limited and fragmented. This underscores the relevance of conducting a comparative assessment of knowledge about breast cancer symptoms and screening methods across several regions of the country, aiming to identify regional characteristics and determine priority areas for preventive activities [3, 10].

Thus, the present study aims to expand and deepen the findings obtained by A. T. Xudaikulov and T. M. Palvanov [9], as well as to develop evidence-based recommendations for increasing women's awareness and improving the effectiveness of early breast cancer detection programs in the Republic of Uzbekistan.

Objective: To assess the level of public awareness of breast cancer symptoms and screening methods in several regions of Uzbekistan, followed by a

comparative analysis of the obtained data with the results of the study by A. T. Xudaikulov and T. M. Palvanov [9].

METHODS

This study was designed as a cross-sectional, descriptive-analytical investigation and was conducted across multiple regions of the Republic of Uzbekistan. The target population included women of both reproductive and post-reproductive age who were seeking care at primary healthcare facilities. Participants were selected using a stratified sampling method to ensure representation across different age groups, educational levels, and urban-rural settings. Data were collected through structured questionnaires that assessed participants' knowledge of breast cancer risk factors, early symptoms, screening practices, and preventive behaviors. The questionnaires were developed based on previously validated instruments and adapted to the local sociocultural context to ensure clarity and reliability. All participants provided informed consent, and the study protocol adhered to ethical standards in accordance with the Declaration of Helsinki. The collected data were analyzed using descriptive and inferential statistical methods to identify knowledge gaps, risk factors, and demographic characteristics associated with lower awareness, thereby providing a comprehensive basis for targeted public health interventions.

Table 1.

Percentage of women who underwent breast cancer screening in different regions of Uzbekistan (%).

Screening method	Tashkent (city)	Samarkand (city)	Xorezm (rural area)	Fergana (rural area)
Self-examination	40	38	15	12
Clinical examination	30	28	10	8
Mammography	35	30	10	8

Note: The percentage of women undergoing regular screening is higher in urban areas and significantly lower in rural regions.

The main data collection method in this study was a questionnaire survey. The questionnaire was specifically designed based on the methodological approaches used in the study by A. T. Khudaikulov and T. M. Palvanov [9] and included structured questions aimed at a comprehensive assessment of women's knowledge about breast cancer, its early symptoms, warning signs, as well as modern and effective screening methods, such as regular breast self-examination, clinical examination by a specialist, and mammography. Special attention was given to questions assessing awareness of preventive measures and the availability of diagnostic procedures, which is important for early disease detection and reducing morbidity and mortality rates.

The primary sources of information were obtained

through an anonymous and voluntary questionnaire survey, which ensured the honesty and reliability of the data collected. The questionnaire also included a range of socio-demographic indicators of the respondents, such as age, place of residence (urban/rural), education level, occupation, and prior experience with healthcare facilities. This allowed not only the determination of the overall level of public awareness but also a detailed comparative analysis among different subgroups, identification of socio-demographic factors influencing awareness, and assessment of the impact of regional differences on access to information and screening programs.

Data collection and analysis were carried out using descriptive statistical methods. The results are presented as absolute and relative values, expressed in

percentages, which allows for a clear visualization of knowledge distribution and identification of key gaps in awareness. To assess the statistical significance of differences between groups, appropriate statistical methods were applied, including frequency analysis, χ^2 tests, and correlation analysis, enabling an objective evaluation of regional and social variations in public awareness.

This approach provides a comprehensive and systematic understanding of women's knowledge, attitudes, and practices regarding breast cancer. By assessing awareness levels about risk factors, early warning signs, and available screening methods, it allows researchers and healthcare professionals to identify specific population subgroups that are most vulnerable due to limited knowledge, socioeconomic factors, or restricted access to healthcare services. Understanding these knowledge gaps is crucial, as early

detection of breast cancer significantly improves prognosis, reduces morbidity and mortality, and enhances the effectiveness of treatment strategies. Moreover, the collected data can serve as a foundation for developing evidence-based, targeted preventive programs and educational campaigns tailored to different age groups, educational backgrounds, and cultural contexts. Implementing such interventions not only promotes timely screening and self-examination practices but also contributes to overall women's health by fostering awareness of general health maintenance, cancer prevention strategies, and healthy lifestyle choices. This multidimensional approach aligns with global public health objectives, such as those outlined by the World Health Organization, emphasizing early detection, health education, and equitable access to preventive healthcare services.

Table 2.**Level of women's awareness of breast cancer symptoms and screening methods in different regions of Uzbekistan (%).**

Screening method	Tashkent(city)	Samarkand (city)	Xorezm (rural area)	Fergana (rural area)
Breast lump	75	68	42	38
Changes in breast skin	60	55	30	28
Nipple discharge	50	48	25	22
Self-examination	40	38	15	12
Mammography	35	30	10	8

Note: The data reflect the percentage of women aware of early breast cancer symptoms and screening methods in different regions of Uzbekistan.

DISCUSSION

The results of the study showed that women's awareness of breast cancer symptoms and screening methods remains low, especially in rural areas. Most women are aware of the disease, but few can identify its early signs or correctly perform self-examination [9]. Similar to the findings reported by the faculty of Khorezm region, we observed that knowledge about mammography and its importance is limited. Women more often receive information from the media and social networks rather than from healthcare professionals. This highlights the need for educational programs and physician consultations, particularly for women with low education levels and those from rural areas. Our data confirm that regular screening and increased awareness play a key role in the early detection of breast cancer and improving prognosis. The development of targeted educational programs can help reduce late consultations and enhance the effectiveness of preventive measures.

CONCLUSION

Our study demonstrated that the level of women's

awareness of breast cancer in several regions of Uzbekistan remains insufficient, fully confirming the findings of A. T. Xudaikulov and T. M. Palvanov[9]. Although most women are aware of the disease itself, their knowledge of early symptoms and screening methods is limited. This creates a risk of late medical consultation, leading to more complex treatment and poorer prognosis. The situation is particularly concerning in rural areas, where women have less knowledge about self-examination, clinical examination, and mammography, and undergo preventive screenings less frequently. In urban areas, awareness was higher, likely due to better access to medical services and educational resources. This underscores the need for targeted interventions tailored to different population groups, taking into account their socio-demographic characteristics.

Information sources also play an important role. We found that most women learn about breast cancer through the media and social networks, while consultations with doctors are less common. This indicates that educational efforts need to be more active: doctors and nurses can conduct regular sessions

to explain symptoms, screening methods, and the importance of prevention. The study results show that systematic work to increase women's awareness can effectively reduce the number of late-diagnosed cases. Educational campaigns, targeted seminars at clinics, and informational materials for women of different ages and education levels can all help women recognize early signs of the disease in time and seek professional care. Thus, our study emphasizes that increasing women's awareness of breast cancer symptoms and screening methods should be a priority for the healthcare system in Uzbekistan. Only a comprehensive approach—combining educational efforts, accessible screening programs, and active involvement of healthcare professionals—can reduce disease incidence and improve patient outcomes, ultimately preserving the health and lives of women in the country.

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