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Case report

Policy Brief: Better Data for Breast Cancer in Libya

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ABSTRACT

Breast cancer represents a growing health challenge in Libya, where data management gaps hinder effective diagnosis, treatment, and research efforts. This policy brief highlights the urgent need for a consolidated data framework to improve the quality and accessibility of breast cancer data across the country. Through standardized data collection protocols and a centralized database, healthcare professionals can better monitor trends, enabling early diagnosis and timely interventions. The proposed approach includes training healthcare personnel in data management best practices and establishing a multi-stakeholder steering committee to oversee data governance, privacy, and security. By addressing these issues, Libya can enhance breast cancer treatment outcomes, support evidence-based policymaking, and contribute to international research efforts. This initiative underscores the critical role of data-driven approaches in advancing public health and improving patient outcomes.

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1. Introduction

Breast cancer is a significant public health concern in Libya, with an incidence rate of 18 percent, translating to eight new cases per 100,000 women. Gynaecological cancers, including breast cancer, are particularly fatal due to delayed detection, largely caused by inefficient data collection processes [1]. These challenges hinder effective screening, research, and strategic planning, leading to late-stage diagnoses when treatment success is lower. Reliable data collection is essential for tracking cases, understanding the disease's impact, and allocating resources effectively [2]. However, Libya's current data systems are fragmented and inconsistent, limiting their usefulness. This policy brief aims to address these gaps by proposing improved data management standards to enhance breast cancer care. By strengthening data recognition, storage, and sharing, healthcare providers and policymakers can make informed decisions to improve early detection, treatment options, and survival outcomes for Libyan women.

2. Problem Statement

The primary issue currently confronting breast cancer health care in Libya is a lack of effective and efficient information collection tools. Without consistent quality data, healthcare providers are unable to make the required judgements that aid in diagnosis and treatment, causing delays [3]. Because of the paucity of data collection, a high percentage of women arrive at the clinic with advanced breast cancer when nothing can be done to control the disease. Current procedures in Libya comprise fragmented data-gathering tactics for both the general population and breast cancer patients; hence, there is no effective data monitoring system. As a result, policymakers are in the dark about screening programs, unable to execute them efficiently, distribute resources in a timely way, or adjust healthcare intervention tactics to demographics. This limitation affects not just patient treatment but also Libyan health institutions and researchers' ability to undertake development research that might aid in the

knowledge and management of breast cancer in Libya.

There are other structural problems to consider, such as a shortage of data management professionals and a lack of norms for data collection, storage, and analysis. Thus, multiple methodologies and standards for data documentation exist in Libyan medical care institutions, resulting in inadequate and erroneous record systems [4]. Furthermore, institutions are more concerned with safeguarding patient confidentiality and data continuity than with fostering widespread data exchange, resulting in limited good-quality data. Healthcare professionals' lack of preparedness for data management best practices also contributes to the persistence of these issues. In many businesses, even obtained data is seldom used efficiently, owing to a lack of important aspects such as sufficient staff training and established procedures and systems. They end up in a situation where Libyan women do not receive treatment for illnesses that are still detectable and treatable, resulting in an accelerated worsening of their health status. Indeed, addressing these factors may help improve the quality and efficiency of Libya's breast cancer management to provide prompt, suitable diagnosis and treatments adhering tactics for both the general population and breast cancer patients; hence, there is no effective data monitoring system. As a result, policymakers are in the dark about screening programs, unable to execute them efficiently, distribute resources in a timely way, or adjust healthcare intervention tactics to demographics. This limitation affects not just patient treatment but also Libyan health institutions and researchers' ability to undertake development.

3. Proposed Solution

Given the data gathering issues in breast cancer in Libya, developing and implementing a consistent data gathering plan, as well as establishing an overall breast cancer database. The aim of utilizing this strategy is to allow for accurate observation and tracking of the disease in various locations of the country.

Setting and implementing uniform protocols for data input, data storage, and data interchange would allow healthcare institutions to contribute to the development of a consistent data framework, which would improve the quality of data gathered in the healthcare system [5]. Training for healthcare personnel will begin to ensure that they can handle data and use linked systems correctly. As a result, this suggested database would help discover patterns, trends, and potential risk factors for the creation of preventative measures as well as early illness diagnosis. These modifications will not only improve data management procedures but will also contribute to more comprehensive analysis, boosting the efficacy and efficiency of breast cancer therapy in Libya.

The solution calls for the development of a cross-sectional executive council made up of representatives from the Ministry of Health, healthcare institutions, research centers, and patient groups. This committee's recommendations will have a significant impact on policy execution and data gathering concerning the country's health needs and international standards. Roundtable meetings, focus group talks, and workshops will be necessary for stakeholders to sit and interact on challenges of breast cancer care to build a shared understanding as well as a road map for how breast cancer care may be better. The strategies that must be implemented during the strategic analysis and evaluation include the development of an efficient data governance framework that will address issues of data privacy and ethical usage, the protection of patient confidentiality, and the establishment of trust in the data system [6]. The sustainability of the data-gathering project will be ensured by funding the program from both national and international sources, as well as by integrating the data system into the national health information architecture.

3. Implementation Plan

The given solution will be implemented gradually since the data collection techniques and the database will first be integrated for

standard use. At first, specialists specializing in data control, healthcare, and policymaking will strive to build and alter these standards in response to the Libyan environment and global trends [7]. This phase will also entail the procurement of technological assistance, such as secure servers and software for data entry, sorting, and storage. Concurrently, general healthcare practitioners will be trained to understand the need to collect accurate data and use the new system. These training sessions will be held both onsite and online to guarantee maximum coverage for as many persons as feasible. To monitor progress and address any concerns, healthcare professionals will be given open input on the collected data, and the procedure will be adjusted accordingly. These activities are planned to be completed during the first six months of the project's implementation and, presumably, will provide the groundwork for subsequent activities.

The next phase will focus on optimizing and integrating the core database and data-collecting techniques. During this phase, the Ministry of Health, healthcare institutions, research institutions, and patient organizations will form a multi-stakeholder Guiding committee. This committee will also oversee the implementation process, which will aim to fulfil the goal of adherence to national health goals while also responding to any new challenges that may develop. Regular roundtable meetings and workshops will enable efficient contact between readers, authors, and researchers from institutions and other groups involved in the provision of breast cancer care. A strong emphasis will be placed on developing a sound data governance structure to ensure data protection and correct use. Other efforts will be made to secure long-term support for the measure from national and international sources.

3. Expected Benefits and Stakeholder Engagement

The given solution will bring major positive shifts in the facilitation of patients' early diagnosis, enhancement of treatment results, and further research in the area of healthcare.

The patient will be able to receive a timely diagnosis and an individual approach to the treatment, and the healthcare practitioners will be able to obtain more objective data to improve patient outcomes. Qualified data will be provided to the researchers on breast cancer, enabling them to improve on their research in Libya [8]. All these improvements will culminate in this in the long run, making the mortality rates drop and the quality of life of patients improve. Stakeholders' involvement is important; there is the multilateral steering committee for the implementation of measures, round tables, and workshop meetings. The value, efficiency, and prolongation of this system will be achieved based on continuous feedback, which in turn will concern the needs of all the participants.

3. Best Practices for Data Management in Breast Cancer Care

Using more effective data collection methods can therefore improve breast cancer remedies in Libya. Procedures for gathering information should be made standard across all health institutions to allow for comparisons across them. Electronic health records (EHRs) should be adopted and used to guarantee that accurate information is entered, and healthcare practitioners should be taught on how to use them. That is why adequate data protection should be implemented, which may be accomplished by connecting to secure cloud services, performing frequent backups, and encrypting the patient's information. Integrating systems and specialized data sharing memoranda across institutions that prioritize patients' interests through a thorough de-identification procedure might improve data interchange. Access control, extensive audit trails, and the implementation of the most up-to-date security standards are critical for protecting health information

3. Potential of artificial intelligence (AI) in Breast Cancer Data Analysis

In Libya, breast cancer data analysis is set to be transformed by the use of artificial intelligence (AI). The program can assist radiologists with

early identification and diagnosis by assessing lesions for indicators of a malignant tumor or by utilizing predictors to evaluate particular risk factors for a given patient. From a therapeutic standpoint, AI can evaluate huge amounts of patient data and develop treatment plans and prognoses for the patient's condition, possibly improving the level of care provided to patients. In research and clinical trials, decision and cognitive intelligence can locate information and connections in huge data that a person might ignore, aiding in the development of novel medications. However, there are several downsides to employing AI in breast cancer treatment. As closely connected to the subject of machine learning (ML) and AI, the issue of data quality, as well as any biases in the ML algorithms utilized, must be addressed to avoid the reinforcement of uneven treatment results. Some of the obstacles include ethical decision making over patient data privacy and the use of AI on patients, both of which require informed permission. Furthermore, implementing AI systems in the field of healthcare necessitates sophisticated procedures for optimal integration into current healthcare systems, as well as appropriate investments and personnel training.

Breast cancer data in Libya has the potential to be given a new lease on life through the intervention of artificial intelligence (AI), with the following values: As a result, general AI-assisted diagnosis may improve the efficacy of early detection and identification of breast disorders while maintaining mammogram accuracy. Deep learning applications in AI can contribute to aiding radiologists to notice aspects that would not readily be noticed by a human eye, thereby increasing the possibilities of early diagnosis and hence higher chances of survival. In addition, AI may apply extensive and efficient prediction models of the patient's data, such as genetics, lifestyle, and family history, to better assess risk levels. This indicates that cost-effective screening might be provided in order to assist these individuals who are at high risk, so efficiently using the Libyan healthcare system's resources.

AI can also have a revolutionary impact on treatment planning and research. The use of

sophisticated big data, complete patient histories, therapy progress, and molecular information can assist in providing more accurate and perhaps better treatment programs with fewer side effects than traditional ones. It also speeds up drug discovery by allowing for the identification of an effective chemical compound and the selection of a molecule based on its expected performance, a procedure that would otherwise be time-consuming and expensive. In clinical trials, AI might automatically identify patients, determine candidates for certain therapies, and detect signals of bad responses to those treatments, hence boosting the speed and efficacy of clinical studies. However, because this is such a delicate subject, the use of AI in breast cancer therapy in Libya must be approached with caution. As a result, the quality and representativeness of data used to train AI models is important to preventing current gaps in healthcare services from widening further. Concerns about how patients' information would be protected, who would have access to patients' information, and how patients would give their consent to the use of AI-generated insights are critical questions that cannot be overlooked due to the potential infringements of patient rights depicted in the current section. There should also be more investment in infrastructure and human training, as well as significant collaboration between AI developers and the Libyan healthcare system on how to utilize cutting-edge technology for the benefit of patients.

4. Recommendations

The following recommendations are judged important in light of the reported limitations in collecting and managing breast cancer data in Libya. To achieve this, protocols for data collection in all healthcare facilities have to be developed. These protocols should be designed in such a way that standardization is attainable, allowing for the methodical gathering of data and the creation of a cohesive national database. It is advised that healthcare practitioners undergo a time of professional development that focuses on the effective

application of these procedures, primarily because the new system must be integrated and executed. [9] Such training should be continual and advisory in nature, taking into account new technology and ways of working that are implemented. There is a need to create a breast cancer data warehouse that can facilitate the safe storage, analysis, and exchange of breast cancer data. This database will also allow for real-time access to patients' data and the integration of multiple entities involved in healthcare service delivery. Also included is a proposal to build strong data governance to ensure privacy and ethical data use. The implementation of these policies should be by international standards to preserve patients' privacy and to provide them with assurances about the information revealed in the health system. A multi-stakeholder steering committee should be constituted to ensure adequate coordination and monitoring of the implementation process, as well as relevance to the national health goals. This group should include members from the Ministry of Health, healthcare facilities, a research centre, and patient associations. Daily/weekly roundtable meetings and seminars should be held to bring all stakeholders together to share knowledge and experiences. Such events will help to disseminate practice models and provide applicable solutions. Another requirement is to establish a steady resource basis to fund the program in the long run via national and international funding. The study's funds will be used primarily to maintain and improve the data-gathering technology that will be used, as well as to improve the data-collection procedure. Others will need to integrate the new data system into the national health information infrastructure before it can function. There will be seamless data exchange and reporting, which will lead to a better solution for breast cancer in Libyan women

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Conflict of Interest

The authors declare that there is no conflict of interest.

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