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Improving Women's Health in the 21st Century: Current Challenges, Medical Advancements and Future Prospects

Seyi Samson Enitan ^{1*}, John Osaigbovoh Imaralu ², Kester Awharentomah Digban ³, Grace Amarachi John-Ugwuanyan ⁴, Saratu Omagbemi Ajike ⁵, Chioma Jane Agunsoye ⁶, Esther Omolara Adetiloro ⁷, Comfort Bosede Alao ⁸

¹ Department of Medical Laboratory Science, Babcock University, Ilishan-Remo, Nigeria.

² Department of Gynaecology and Obstetrics, Babcock University Teaching Hospital, Ilishan-Remo, Nigeria.

³ Department of Medical Laboratory Science, Novena University, Ogume, Nigeria.

⁴ Medbury Medical Services, Lagos, Nigeria.

⁵ Department of Public Health, Babcock University, Ilishan-Remo, Nigeria.

⁶ Department of Medical Laboratory Science, Covenant University Medical Centre, Ota, Nigeria.

⁷ Department of Microbiology, Babcock University, Ilishan-Remo, Nigeria.

⁸ Department of Pathology, Babcock University Teaching Hospital, Ilishan-Remo, Nigeria.

***Corresponding Author:** Seyi Samson Enitan, Department of Medical Laboratory Science, Babcock University, Ilishan-Remo, Nigeria.

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Abstract

The field of women's health covers various physical, emotional, and social aspects. In recent years, there has been a growing recognition of the importance of improving women's health. Women face a plethora of problems including infertility, cancer, diabetes, depression, and cardiovascular disorders amongst others. These health problems are compounded with gender disparities, lack of access to healthcare, denials of reproductive rights, aging and poverty. To surmount these challenges, comprehensive approaches, including improved access to healthcare, awareness programs, mental health support, and addressing gender bias and environmental health concerns are required. Precision medicine has the potential to transform outcomes for women with chronic and genetic diseases. Digital technologies have revolutionized healthcare access and monitoring for women, enabling remote consultations and self-monitoring of health conditions. Advancements in breast and cervical cancer screening, such as digital breast tomosynthesis (DBT) and Human Papillomavirus (HPV) testing, have improved early detection and prevention. While there is still work to be done in addressing the challenges and disparities in women's health, these medical advancements offer hope for improved outcomes and better quality of life for women. Continuous research, awareness and policy adjustments are still needed to promote woman's health on a global scale in the future.

Key words: women; challenges; future prospects; health; medical advancements

Introduction

The field of women's health is vast and intricate, encompassing physical, emotional, and social aspects. It delves into comprehending and addressing the distinct health needs and challenges faced by women throughout their lives [1]. In recent years, there has been a growing recognition of the importance of improving women's health in the 21st century as it covers a broad range of issues unique to women such as reproductive health, hormonal imbalances, and female anatomy concerns [2]. Women face diverse health hurdles like breast cancer, cervical cancer among other illne-

sses that have high morbidity rates [3]. Factors like poverty, discrimination, and limited healthcare access only worsen existing health challenges. With preventable causes relating to pregnancy and childbirth, almost 800 women died every day in 2020. Shockingly, a maternal death occurred every two minutes at this time. Lower middle-income countries witnessed almost 95% of these deaths in 2020 [4]. A comprehensive and multifaceted approach is integral to the pursuit of enhancing women's health in 21st century.

In recent years, there has been a surge in research into women's healthcare, leading to revolutionary advances in the understanding and treatment of conditions and illnesses that specifically affect women. In addition, more focus is being placed on incorporating women into clinical trials, addressing the long-standing deficit in representation [5]. Unfortunately, however, women are still subject to unequal access to healthcare and ill-fitting healthcare policies, from diagnosis and treatment through to women living in countries with limited resources. And because women's symptoms are under-recognized, they face an alarming increase in misdiagnosis and under-medication. From dysmenorrhea to fertility and pregnancy-related complications, women's health has unique challenges that require special attention [6]. Among them, cardiovascular disease is one of the most urgent and dangerous chronic health problems facing women worldwide, yet healthcare systems may not provide patients with the necessary tools to diagnose and treat the disease. Diagnostic approaches and treatment plans remain disproportionate, unfortunately predominantly for male patients, with insufficient or no solutions for female patients [7, 8]. This review examines the current challenges confronting women's health, the medical breakthroughs that tackle these challenges and the prospect of progress in the future.

Challenges in Women's Health

There remain many obstacles to overcome in the realm of women's health, despite considerable study and progress made in the last decades. Some of which include:

1) Reproductive Health Problems

Reproductive health problems pose a major obstacle to women's well-being globally. Concerns regarding pregnancy, childbirth, and fertility are all encompassed within this [4]. Every day, over 800 women die due to pregnancy and childbirth related complications, resulting in alarmingly high maternal mortality rates worldwide. Inadequate accessibility to contraception also contributes to the prevalence of unplanned pregnancies and unsafe abortions afflicting numerous women. To ensure better reproductive health outcomes, it's imperative for policymakers and healthcare providers to enhance access to reproductive healthcare services such as contraception, safe and legal abortion services, and family planning. In addition, instructional programs that promote sexual health, foster healthy relationships, and uphold reproductive rights have the potential to lessen unintended pregnancies and maximize health benefits from reproductive services [9].

2) Hormonal Imbalance

Hormonal imbalance is a persistent and profound issue impacting women's health [10]. Unstable menstrual cycles, acne, fat accumulation and infertility are only a few of the countless symptoms. Commonly seen is Polycystic Ovary Syndrome (PCOS). Imbalance in periods, ovarian cysts, and the inability to conceive are all linked. To recognize and ameliorate these issues, healthcare specialists must themselves be adept and familiar with accurate analysis and treatment of conditions such as PCOS or endometriosis. Additionally, further research is needed to discover the sources of the conditions which can open up new potential treatments and improve health for all [11, 12].

3) Mental Health Challenge

Mental health is another problem confronting women's health [13]. Women are two times as probably as men to experience stress, despair and depression, and they're additionally much more likely to experience post-traumatic stress disorder (PTSD). Women who experience intimate partner violence are at elevated chance of depression, anxiety, and PTSD. Additionally, many women struggle with body image troubles, eating disorders, and different mental health troubles associated with societal pressures and expectancies. To cope with mental health demanding situations, government and healthcare providers have to intensify efforts to provide easy access to mental fitness services, together with counseling and therapy. Additionally, educational packages that promote mental health focus and decrease stigma can assist raise attention of mental health issues and encourage more people seek for therapy in a timely manner [14].

4) Chronic Diseases

Chronic diseases such as heart disease, diabetes and cancer are the leading causes of mortality globally [7]. Women need emotional, financial and medical support to effectively combat the staggering mortality rates from chronic diseases [15]. These conditions present unique barriers requiring ongoing treatment and intervention that make prevention strategies all the more urgent. Addressing the complexities of this problem requires timely access to medications and aggressive lifestyle changes.

5) Lack of Access to Healthcare

Women around the world have a variety of difficulties when attempting to receive high quality healthcare-- this situation has a significant impact on their health [16]. A lack of access to antenatal care, qualified attendants during childbirth, emergency obstetric care, postnatal care, and other services increase the probability of death and illness in women during and after labor. Additionally, those who lack significant financial support for reproductive health services have a higher rate of maternal and neonatal mortality, as well as having abortions that are unsafe and labor-related problems [17]. Additionally, without family planning advice that is appropriate, women have difficulty utilizing contraceptives, and receiving reproductive education, they are susceptible to unplanned pregnancies, hazardous abortions, and increased prevalence of diseases that are transmitted through sexual contact [18].

6) Gender Bias

Gender bias is an unjust and unequal practice which has far-reaching implications for healthcare and beyond. This prejudice manifests in various ways, including differential access to healthcare, health outcomes, and overall wellbeing for women [19]. Of particular concern is gender bias in reproductive health; women's specific health needs such as pregnancy, childbirth, menstruation, and menopause suffer from inadequate attention and resources, making them more vulnerable to complications, poor maternal and child health outcomes, and even death. The impact of gender bias isn't just physical, however; it affects women's mental health, too. Social roles, expectations, and judgments can lead to an increase in distress and mental health disorders. Gender bias also limits women's ability to pursue educational and career paths, and economic autonomy—further exacerbating the effects of mental health issues. Unawareness of gender-specific conditions may contribute to delayed diagnosis and treatment, and research that excludes women's health needs further complicates access to appropriate treatments and therapies [20]. Worst of all, gender bias has resulted in an increase in violence against women in the forms of domestic violence, sexual assault, and female genital mutilation all having serious physical, psychological, and emotional repercussions. These harsh realities point to a prevailing need to address the pervasive gender bias in our society.

7) Aging

Women generally experience a longer lifespan than men; however, sadly, this blessing may also bring with it a range of age-related health issues such as osteoporosis, menopause, memory loss, and financial insecurity, which can profoundly affect the quality of their lives [21]. This difference in male and female life expectancy further emphasizes the importance of providing women with the necessary medical attention and care. In many cases, elderly women also suffer from social isolation due to the death of their husbands. Governments and healthcare providers must work together to develop advanced prevention strategies, conduct meaningful research, and effectively manage aging-related issues [22]. The collaborative effort between the two respective entities may be critical in providing elderly women with much-needed ease and relief from their struggling conditions.

8) Denial of sexual and Reproductive rights

Sexual and reproductive rights constitute a considerable challenge for women's health and wellbeing [23]. All around the world, women face several obstacles to attain access to family planning, safe abortion services, and contraception - restrictions that can cause an extreme detriment to them. It is not uncommon for women to encounter discrimination or violence due to their legitimate sexual and reproductive decisions. Therefore, to tackle this persistent issue, policymakers and healthcare agencies ought to shield and further extend access to reproductive healthcare policies, such as contraception, family planning, and safe and

legal abortion services [24]. To reduce stigma and allow more women to make use of such services, it is necessary for governmental organizations to put in place educational programs that foster knowledge of sexual and reproductive rights.

9) Health Disparities

Another challenge faced by women is health disparities [25]. For communities who are discriminated against, including those of different ethnicities, sexual orientations, and disabilities, gaining access to healthcare is too often a challenge [26]. This problem is of paramount importance to policymakers and health professionals who should strive to provide adequate medical care, specifically for minority groups, the economically disadvantaged, and rural populations. Ensuring better health outcomes requires ongoing efforts to promote awareness of health disparities while simultaneously fighting against prejudice. Education initiatives, in particular, provide an essential means of generating improved access to necessary medical amenities [26].

10) Environmental Factors

Women's health is significantly encountering environmental health difficulties [28]. From air pollution to chemical exposure and pervasive climate change factors, women are more susceptible to degradation of their wellbeing than men. Consequently, it is essential that stakeholders, including policymakers and healthcare professionals, promote regulations that take into account air and water quality, food safety, climate change, and other impacting variables as essential components of safeguarding women's health. In addition, education concerning environmental health measures can help lower exposure to toxins, ultimately producing a healthier living environment [29].

Medical advancements that have improved Women's Health

The magnitude of challenges obstructing women's health can no longer outweigh the remarkable advances made in the medical sphere, delivering remarkable transformations and surplus of positive, life-transforming results to the state of women's health. From sophisticated treatment methods, sophisticated diagnostic techniques to preventive actions, these advances promise to increase the quality of life, with comparatively awesome outcomes for patients [30]. The current innovative capabilities in diseases diagnosis, therapy and prevention have revolutionized women's health care. These include:

i) HPV Vaccine

The human papillomavirus (HPV) vaccine is now available. For women, it offers an unparalleled level of protection against the high-risk strains of the virus. Groundbreaking studies demonstrate its safety and effectiveness against a gamut of potentially life-altering HPV-related health conditions. From cervical cancer to many other perilous maladies, the vaccine is an epoch-making beacon of hope and renewal for the female populace embroiled in this battle [31, 32].

ii) Precision Medicine

Precision medicine is a revolutionary approach in the field of healthcare, an individualistic approach that posits that every patient's unique genetics, environment, and lifestyle should be taken into account when creating a treatment plan. The potential to transform outcomes for women affected by chronic illnesses, rare and genetic diseases make this concept of precision medicine utterly groundbreaking. Its complexity and versatility in sentence structure promises to revolutionize the personalized healthcare sphere, unlocking far-reaching and life-saving advancements [33, 34].

iii) Digital and Telehealth Technologies

Digital and health technologies like mobile applications and wearable devices are revolutionizing healthcare outcomes for women. With cutting-edge monitoring features, women are able to accurately monitor their health status and keep tabs on any chronic conditions they may have. Owing to its convenience, it is an ideal solution for those living in remote or rural areas, or for individuals with time-consuming childcare duties and active work schedules [35]. Not to mention, telehealth offers the possibility to establish a secure connection between patients and healthcare providers, wherever they may be, allowing them to access medical services directly from the comfort of their homes. Additionally, access to remote healthcare services

allow them to be more productive and proactive in managing their health from a distance. Consequently, digital and Telehealth technologies are providing women with a unique opportunity to take ownership of their healthcare, thus improving overall outcomes [36-38].

iv) Breast Cancer Screening

The issue of breast cancer has severe global implications for women, ranking as the second highest cause of cancer-related deaths around the world [39]. Fortunately, advancements in technology enable us to fight against its devastating effects. Advanced care techniques including modern mammography and digital breast tomosynthesis (DBT) have emerged to greatly enhance precision in detecting tumors, particularly among those with dense breasts. Consequently, experts from the American College of Radiology recommend employing DBT as the optimal screening procedure for high-risk groups. The successful adoption and integration of this three-dimensional imaging technique stand among many successes in combating the scourge of breast cancer among women; lending further motivation and hope towards swift recovery for affected individuals [40].

v) Cervical Cancer Screening

Cervical cancer is a major health concern in many low-income nations, but it is one of the most preventable types of cancer. The introduction of the Human Papillomavirus (HPV) vaccine and HPV testing in recent years has turned the tide in protecting women from this deadly disease. Studies have found that the vaccine is up to 90% effective in preventing cervical cancer, while the HPV test can detect which women are at an increased risk of it. Embracing this paradigm shift, the American Cancer Society now recommends HPV testing as the primary screening test for females aged 25 and above. Furthermore, research suggests that this screening system can almost completely eradicate cervical cancer in low-income countries, making it the key for women to realize a life without such a fearful disease [31].

vi) Genetic Testing

Genetic testing has revolutionized the diagnosis and subsequent treatment of hereditary diseases, including those affecting the female population. Genetic testing for mutations inside the BRCA1 and BRCA2 genes, which increase the risk of breast and ovarian cancers, has become extra reachable and low priced in latest years. Women with such mutations can now take preventative measures consisting of prophylactic surgical operation and frequent screenings to reduce their chance of developing cancers [41].

vii) Minimally Invasive Surgery

Technological improvements in surgical procedures have steered towards less invasive methods that aim to decrease scarring, lower discomfort and recuperation duration while improving overall results. Within gynecology, laparoscopic and robotic advancements present themselves as increasingly trending when performing hysterectomies, myomectomies, or ovarian cystectomies [42]. Both alternatives rely on the aid of personalized instruments and cameras to carry out surgery with precision, but with minimal damage to healthy tissue primarily through tiny incisions [43].

viii) Pelvic Floor Disorders Management

Women frequently experience pelvic floor disorders such as urine incontinence and pelvic organ prolapse, especially following childbirth and menopause. Traditional therapies like surgery and Kegel sporting activities have made little impact with high risks. However, newer trends like the percutaneous tibial nerve stimulation (PTNS) and transvaginal mesh have showed promise in addressing these conditions. While PTNS makes use of a small electrical device to stimulate the nerves that govern bladder function, transvaginal mesh is a surgical implant that supports the pelvic organs and prevents prolapse [44, 45].

ix) Fertility Treatments

Around 10% of couples struggle with infertility, however advances in reproductive technology have made it feasible for plenty of women to

conceive. *In vitro* fertilization (IVF) has been the most successful fertility solution, with success rate growing considerably better little by little through the years. However, the success of IVF is predicated upon on the quality of the eggs and sperm, and a few women may not be able to produce viable eggs due to age or clinical conditions. In current years, egg freezing and donor egg programs have turn out to be well-known options for women who want to keep their fertility or have trouble conceiving with their personal eggs [46].

x) Menopause Management

Menopause is a natural biological phenomenon that happens in women as they age, but it may result in more than a few physical and emotional symptoms that may impact quality of life. Hormone replacement therapy (HRT) has long been the gold standard for managing menopausal symptoms; however, concerns about its safety have led to a search for alternative remedies. Non-hormonal treatments which include selective estrogen receptor modulators (SERMs), gabapentin, and acupuncture have shown promise in managing signs which includes warm flashes, night time sweats, and mood changes [47].

xi) Mental Health Management

Mental health is a vital aspect of the overall health, and women are more prone than men to develop mental health issues such as stress and depression. In recent years, there was a developing attention of the significance of intellectual fitness, and advancements in treatments have made it possible for women to manage their symptoms and enhance their quality of life. Cognitive-behavioral therapy (CBT), a type of talk therapy, has been shown to be powerful in treating stress and anxiety, and medications along with selective serotonin reuptake inhibitors (SSRIs) have also been useful in managing signs [13, 14, 48].

xii) Sexual Health Management

Women need to pay attention to their sexual health. Issues like sexual dysfunction and sexually transmitted infections (STIs) have continued to have a substantial impact on the quality of women's health. Advancements in the treatment of STIs have led to better outcomes, with antibiotics and antiviral agents now available for most commonplace infections. Sexual dysfunction can be due to physical or psychological factors, and remedies along with hormone therapy, psychotherapy, and remedy have been shown to be powerful in managing signs and symptoms associated with sexual dysfunction and STI [11].

xiii) Pregnancy and Childbirth Management

Pregnancy and childbirth are highly significant moments in a woman's life. Advances in prenatal diagnosis and care, labor and delivery have made it safer for mothers and child alike. Take prenatal screening, amniocentesis and ultrasounds for examples; their existence and usage for identification and monitoring of any potential problems provides scope for interventions such as bed rest or medication to address issues such as preeclampsia or gestational diabetes. Moreover, epidurals and other forms of pain management during labor and delivery facilitate a more comfortable birth experience for many expectant mothers [49].

Future Prospects for Improving Women's Health

The near future looks bright for improved women's health, with an emphasis on the following areas:

Enhanced Preventative Care

Various medical advancements will allow for more precise and personal screenings, taking into account factors such as genetic makeup, lifestyle, and medical history. Moreover, early detection and intervention plans will be implemented for various conditions such as breast cancer, cervical cancer, cardiovascular diseases, and mental health disorders, alongside comprehensive sexual and reproductive health services such as family

planning, contraceptive methods, and sexually transmitted infection (STI) prevention [10, 50].

Gender-sensitive Research and Treatment

Increased investment in research that focus on women's health concerns is critical, while simultaneously taking into account a diverse representation across age groups, ethnicities, and socio-economic status. These results can potentially lead to stronger and more effective treatments that pay special attention to how gender influences the manifestation, progression, and response to certain therapies [51].

Digital Health and Telemedicine

Digital health technologies possess the potential to revolutionize healthcare dramatically, particularly for women living in secluded, rural areas. Telemedicine, remote monitoring, and handheld, health-centric applications enable these women to access medical services, consultation, and follow-ups from the comfort of home, outside the boundaries of geographical area. Women, in addition, now have the power to control their health- outcomes – thanks to the access of important data, tracking of menstrual cycles, monitoring of pregnancies and management of chronic conditions. This technology is rapidly advancing and offering unprecedented possibilities for improved access to healthcare for women everywhere. It has the potential to profoundly impact health and wellbeing of the female population [49].

Holistic Approach to Women's Health

Women's well-being contains more than just physical health - a holistic strategy is quickly becoming commonplace [52]. This strategy puts mental health, social determinants of health, and gender equality at its core. The public conception of mental health support will become more accepting towards those seeking assistance. Additionally, actions to eliminate disparities in education, jobs, accommodations, and income discrepancies will be taken to make sure that women live a healthier lifestyle. With these actions in hand, it will become easier for women to live long, happy lives [53].

Empowering Women in Healthcare Decision-making

It is essential for women's representation in healthcare leadership and decision-making roles to be a priority, given its critical role in improving women's health outcomes [54]. Nowadays, the focus on achieving gender diversity in healthcare organizations and policy-making bodies is higher in order to ensure that women's perspectives, experiences, and needs are taken into consideration when creating healthcare strategies and policies, driving us closer to the goal of an equitable and more inclusive healthcare system [5]. In order to accomplish this, it is necessary to have a collaborative effort that involves various sectors, including healthcare, education, and policy-making. Through this, a fairer healthcare system that considers the social factors around health and prioritizes women's needs can be created [55].

Conclusion

Women's health is an intricate and expansive issue, with a myriad of complex complications ranging from reproductive health issues to hormonal imbalances, from chronic illnesses to mental health-related dilemmas. Moreover, women often face gender disparities and lack access to healthcare. Fortunately, recent developments such as the HPV vaccine, precision medicine, telehealth treatments, and research into maternal health, digital healthcare, and overall advancements in women's health have given reason for optimism. It is essential for providers, policymakers, and the public to join forces in order to make progress in the 21st century. Thanks to the current successful strides taken in women's health, more equitable healthcare is now possible, reflecting individual diagnosis and treatments as well as an accommodating healthcare system. Breast cancer screening, genetic testing, cervical cancer screening, minimally invasive surgery, menopause management, fertility treatments, mental health, sexual health, and pregnancy and childbirth treatments have seen thrilling progress. As

technology continues to advance, such success could continue to be repeated - with the overall health of women worldwide being progressively improved. Through a combination of effective and personalized therapy, the health of women around the world is set to flourish in the 21st century.

Abbreviations:

DBT, Digital breast tomosynthesis; HPV, Human Papillomavirus; PCOS, Polycystic Ovary Syndrome, PTSD, Post-traumatic stress disorder; BRCA1, Breast cancer gene 1; BRCA2, Breast cancer gene; PTNS, Percutaneous tibial nerve stimulation; IVF, *In vitro* fertilization; HRT; Hormone replacement therapy; SERMs; Selective estrogen receptor modulators; CBT; Cognitive-behavioral therapy; SSRIs; Selective serotonin reuptake inhibitors; STIs; Sexually transmitted infections.

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The authors declare that there are no conflicts of interest.

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