

## IFMSA Policy Proposal Self-Care in Reproductive Health

Proposed by Team of Officials

Presented to the IFMSA Hybrid General Assembly March Meeting 2022

### Policy Commission

- Mirna Hussein - IFMSA-Egypt - [mirnahussein@gmail.com](mailto:mirnahussein@gmail.com)
- Izundueze Victor Chukwuemeka - NiMSA-Nigeria - [victorzolati10@gmail.com](mailto:victorzolati10@gmail.com)
- Klaudia Szymuś – IFMSA Liaison Officer for Sexual and Reproductive Health and Rights Issues, incl. HIV&AIDS - [Ira@ifmsa.org](mailto:Ira@ifmsa.org)

### Policy SWG

- Joshua Aluga Gideon – NiMSA-Nigeria - Coordinator
- Klaudia Żak – IFMSA-Poland
- Feriel Arezki - Le Souk Algeria
- Divya Garg - MSAI India
- Alondra Rosales Padrón - AMMEF-Mexico

## Policy Statement

### Introduction:

Self-care is defined as the individual's ability to maintain health with or without the support of a healthcare provider. It is considered a key strategy to mitigate inequalities in access to health due to low costs, broad accessibility, convenience, and confidentiality. Social and cultural factors often restrict access to reproductive health services. Implementation of self-care interventions in reproductive health responds to existing barriers that will result in better health outcomes and increased well-being.

### IFMSA position:

The IFMSA recognizes the role of self-care in exercising one's sexual and reproductive health and rights and in empowering individuals to have control over their bodies and make informed decisions regarding their well-being and health. IFMSA affirms that self-care does not shift the responsibility to an individual but requires systemic support that ensures health and digital literacy, creates enabling and safe environments, and allows reaching for professional help. We urge the stakeholders to address existing gaps in healthcare and social systems. As future medical workers, we support implementing a people-centered approach such as self-care to provide constant, high-quality care that is tailored to the needs of an individual and reduces stigma around reproductive services.

### Call to Action:

Governments and international agencies to:

1. Utilize, prepare, participate and financially support activities that aim to raise awareness on the importance of reproductive health, such as public campaigns and digital technologies.
2. Promote comprehensive sexuality education (CSE) at schools and youth centers to teach adolescents how to care about their own reproductive health.
3. Support financially and facilitate access to screening and prevention methods, especially the most sensitive and specific methods that people can practice to protect their health, including the promotion of self-collection and self-testing, when appropriate.
4. Ensure equitable access to SRHR services and products to all people, with emphasis on left-behind populations that will enable them to practice self-care to the same extent.
5. Establish guidelines that will allow the healthcare sector to respond to the needs of their patients in practicing self-care in reproductive health.
6. Ensure that health education on self-care is integrated into a country's primary care and universal health coverage (UHC) policies, programming, and funding.

Civil society to:

1. Support participation in STIs and reproductive cancers screening programs alongside HPV vaccine uptake.
2. Promote autonomy and agency of all people by providing evidence-based resources on the benefits of self-care in reproductive health.
3. Dissipate misinformation related to self-care, play an active role in deconstructing the stigma surrounding self-managed abortion, STIs testing, HPV vaccine, and advocate against laws limiting access to reproductive health services.
4. Encourage and develop evidence-based peer education programs, have a sex-positive, human rights-based approach delivered by trained facilitators, and, whenever applicable, follow local, national, or international guidelines on self-care in reproductive health provision.
5. Collaborate with relevant stakeholders to work towards advancing adequate access to information, self-testing and self-screening services, and products, particularly in resource-limited settings.

6. Recognize screening programs and self-check of reproductive organs as a valuable public health tool, ameliorating physical and mental health and well-being of all communities.
7. Collaborate with stakeholders to ensure universal access to sexual and reproductive healthcare services and integrate reproductive health into national strategies and programs;
8. Collaborate with relevant stakeholders to provide CSE at schools and youth centers to teach them how to care for their reproductive health and dissipate misinformation.
9. Collaborate with relevant stakeholders to develop an accurate tool for the assessment of sexual and reproductive health literacy.

Medical students and National Members Organizations to:

1. Identify stakeholders and actively advocate for self-care in sexual and reproductive health issues;
2. Create and contribute to awareness and education campaigns and activities on self-care in sexual and reproductive health, including an intersectional approach to health;
3. Undertake research related to awareness on self-care in sexual and reproductive health, including the availability of resources, treatment options, and elimination of stigma;
4. Collaborate with other civil society, non-governmental and youth-led organizations on joint efforts to promote self-care in terms of sexual and reproductive health and rights;
5. Work and implement age-appropriate CSE models for young minds in collaboration with relevant stakeholders to improve self-care in adolescents;
6. Work to deconstruct social stigma and patriarchal mindset that prevents young individuals from seeking help and timely self-care.

Healthcare sector and healthcare providers to:

1. Ensure that information and health services are always accessible and available if needed for patients to receive guidance on self-care practices in reproductive health.
2. Train healthcare providers in self-care issues, including the use of technologies and communication skills to appropriately inform and provide counseling.
3. Promote and apply attitudes and behaviors of respect, non-stigmatization, and inclusion to create safe spaces allowing patients to make informed decisions about their own care in a non-judgmental environment.
4. Champion self-care with patients, peers, and in your professional networks, families, and communities.
5. Advocate for ensuring and regulating access to appropriate, safe, and quality products, services, and technologies outside medical facilities (e.g., pharmacies, at-home, or online).
6. Adapt and expand strategies to provide self-care information to be accessible and understandable for diverse populations seeking to overcome literacy issues and language barriers.
7. Ensure the accessibility and availability of self-care services in the event of humanitarian emergencies.

Digital industry and educational sector to:

1. Collaborate to promote the use of digital health interventions for self-care as well as the incorporation into the school curriculum at all levels to increase technological literacy.
2. Give priority to innovating more user-friendly self-care technologies that can be accessible and affordable to people of all social statuses.
3. Strengthen user data privacy protection to ensure optimal anonymity and prevent data theft.
4. Optimize digital health interventions with the interests of both patients and healthcare givers.
5. Promote self-care in comprehensive sexual and reproductive health education.

## Position Paper

### Background Information

The World Health Organization (WHO) defines self-care as “the ability for individuals, families, and communities to promote, maintain health, prevent disease and cope with illness with or without the support of a healthcare provider.” It entails practices divided into three groups: self-management (e.g., self-administration of medications, self-examination), self-testing (self-screening, self-monitoring, self-sampling), self-awareness (e.g., self-education, being mindful of one’s symptoms and seeking medical help whenever necessary, implementing healthy habits) (1). Self-care tools and interventions are critical to addressing social determinants of health, increasing healthcare quality through integrated services, and reducing the burden put on healthcare workers. Through their convenience, accessibility, and affordability, self-care approaches reduce health disparities within and between countries as health systems that are full-staffed, well-functioning, ensure comprehensive care, and located in a well-maintained infrastructure are not a reality for the majority of countries but more of a goal that has yet to be achieved (2). Due to the personal aspect and ensuring confidentiality, self-care became essential for reducing social barriers in realizing sexual and reproductive health and rights (SRHR) and exercising body autonomy. In the context of reproductive health, it includes practices such as fertility regulation, STIs testing or advice seeking, prevention of reproductive cancers, self-administration of medications during menstruation, HIV infection, among others (3). Existing strategies of self-care implementation aim to improve antenatal, childbirth, and postpartum care; increase the accessibility of family planning services (contraception and infertility support); eliminate unsafe abortion; reduce STIs through prevention and early detection; decrease mortality of reproductive cancers and promote sexual health (4).

### Discussion

#### Human Papillomavirus (HPV) Vaccination

Findings have shown that 70% of cervical cancer cases are associated with high-risk types of HPV (16, 18) (5). However, we have over 100 different types of HPV, among which a minimum of 14 can cause cancers (6), including anal, external genitalia, mouth, and oropharynx cancers (7). Only 1% of HPV infections result in cancer and genital warts, while 90% of these infections are cleared off by the body’s immune system undetected (8).

HPV types 6 and 11 are responsible for noncancerous conditions like genital warts and Recurrent Respiratory Papillomatosis (RRP) (9). Immunocompromised individuals like people living with HIV/AIDS are more at risk to these HPV types and may experience rapid progression to precancerous lesions and cancer whenever infected. In comparison, men who have sex with men (MSM) are more at risk for HPV type 6, 11, 16, and 18 (10).

Vaccination against HPV is among WHO’s primary prevention strategies against cervical cancer (11). Currently, three vaccines are available and licensed in most countries for the prevention of HPV. Bivalent vaccines target HPV type 16 and 18, Quadrivalent vaccines target HPV type 6, 11, 16, and 18 (12) while Nonavalent vaccines target five additional HPV types (31, 33, 45, 52, and 58) (13). Two-dose vaccination of children aged 9-14yrs in the interval of 6 months is encouraged to reduce the prevalence of cervical cancer (11). This HPV vaccination can remain effective in preventing cancers for over 6-11 years (14).

We currently have significant knowledge gaps on the impact and opportunities of vaccination of adults and have a low supply of vaccines in low- and middle-income countries (LMICs). Still, routine immunization of adults should not be neglected, especially for MSM and people living with HIV(15).

A study showed that from 2008 to 2020, over 3.3 million females of LMICs were vaccinated (16). Adopting HPV Vaccination as a national program started earlier in high-income countries (HICs). Even though 70% of cervical cancers occurred in LMICs, in 2014, a study estimated that only 1.1% of adolescent girls were vaccinated in all 84 LMICs. However, progress was made in 2016, with 12 LMICs introducing HPV Vaccination in their national programs (17). Despite the high adoption rates in HICs, coverage in National programs is low compared to LMICs (18).

Even though HPV vaccination prevents cervical cancer, it does not treat pre-existing infections (12). Therefore, it is advisable to educate people and healthcare givers to avoid behaviors that increase risks of contracting HPV and provide training on HPV precancerous and cancer screening, diagnosis, and treatment (19).

Generally, knowledge of HPV infection is low. Reports have shown that people complained about the age for vaccination, but there was a decrease in hesitancy after informing about the benefits of early vaccination (20). Adolescents who form the target group for HPV Vaccination tend to use social media as their first point of accessing information. They are susceptible to finding negative information, which studies have shown to reduce acceptability and coverage (21). Advancing health literacy to improve decision making, improving accessibility of the vaccine to be given at pharmacies and drug stores, and ensuring there are no out-of-pocket costs for the vaccine are approaches to help improve HPV vaccination (22–24).

### Self-check of reproductive organs

Regular self-check of reproductive organs in some diseases, like testicular (25), vulvar (26) (27), or breast (28) cancer, can be more effective than occasional contact with a doctor. The knowledge about human anatomy can help maintain good health, improve sexual life, and in consequence - the quality of life due to a better understanding of one's body.

A vaginal self-examination is a way for people with ovaries to look at their vulva and vagina. For testicular self-examination, the main goal is to check testicles for abnormalities (25). For people with ovaries, it may help in the understanding of one's body and in an acceptance of changes during the menstrual cycle (29). The process of self-examination, especially for young people, can be challenging. Therefore many associations and health websites, like National Vulvodynia Association (30), teach how to do genital self-examination. They pay attention to medical aspects of examination and important psychological or environmental factors like lighting in the room or relaxation. In addition, they show photos, which help in their organs' evaluation (29) (31) (32).

Unfortunately, scientific data describing the knowledge about our body anatomy is limited. The study of M. Preti et al. using a 29-question survey about vulvar anatomy, self-examination, and sociodemographic details investigated the knowledge of vulvar anatomy and self-examination in a group of 512 women. The results were the following: 15% of women could match elements of vulvar anatomy correctly, 76% have never heard about vulvar self-examination (VSE), and 61% feel shame and embarrassment when approaching their genitalia. 69% of women would like to know their bodies' anatomy (33). The above-quoted study is the only one describing the women's understanding of vulvar anatomy and self-examination. In addition, the study was conducted on women from only one country, and therefore, the results should be compared with other continents and countries. Nevertheless, with shame and fear of stigma impeding individuals from accessing information about their bodies' anatomy and performing self-checks, overcoming those barriers will go a long way towards improving individuals' access to knowledge.

### Reproductive cancers screening

Screening and testing are used to detect a disease, such as cancer, in people who are not symptomatic. Reproductive cancers refer to reproductive organ cancers. These are cancers in the breast, cervix, uterus, vulva, endometrium, or ovaries. Reproductive cancers can also be found in the prostate, testicles, and penis (34).

The incidence of breast cancer rises sharply around the age of 40. Randomized trials have proved that screening starting at age 40 reduces mortality. Early detection remains the primary way to prevent the development of life-threatening breast cancer (35).

According to the guidelines from the American College of Obstetricians and Gynecologists, for people with breasts aged 40 to 49 years with average risk who desire to screen, mammography may be offered once a year or once every two years, and clinical breast exams may be provided once a year. For people aged 50 to 74 with average risk, the same recommendations for mammography still stand, minus the clinical breast exams. Shared decision-making after appropriate counselling is important for determining the frequency of screening with mammography, whether once a year or once every two years, as every person is different. In the context of annual clinical breast examinations, a similar decision-making approach that recognizes their additional advantages and disadvantages beyond screening mammography can also be employed (36–38). There are different breast cancer screening guidelines for people with breasts who are at high risk of developing breast cancer (39).

Cervical cancer is human papillomavirus (HPV)-related malignancy. In 2020, more than half a million people with cervix contracted cervical cancer, and about 342 000 died as a result. HPV vaccination, screening, and treatment of high-grade dysplasia are effective measures so that every person with cervical cancer gets the treatment they need, and avoidable deaths are prevented (40). Cervical cancer screening is done by cytology (Pap testing) alone, Pap and HPV co-testing, or primary HPV testing (41). Self-care technologies such as self-sampling for HPV can be beneficial. Studies have found that individuals are twice as likely to accept HPV screening when they have the option to collect their own sample. Self-sampling can increase the number of people partaking in cervical cancer screening compared to the standard of care (42,43).

In 2020, The World Health Assembly endorsed WHO's global strategy for cervical cancer elimination. It calls for 70% of women globally to undergo regular screening for cervical disease with a high-performance test and for 90% of those needing treatment to receive it. Implementing this global strategy while continuing the vaccination of girls against HPV could prevent more than 62 million deaths from cervical cancer in the next 100 years (40).

Ovarian cancer is the 8th most common cancer in people with ovaries and the 7th cause of cancer-related deaths (44). There has been a lot of research to develop a screening strategy for ovarian cancer, but at this time, a clinically applicable screening strategy for ovarian cancer in the general population cannot be made based on the available data. The proteomic approach has yielded encouraging preliminary findings that may later resolve this important clinical problem (45).

Despite no clear data, some recommendations were developed for people with ovaries at average risk and increased risk. Nowadays, transvaginal ultrasound (TVUS) and the CA-125 blood test for the BRCA-positive group are the two most commonly used tests (in addition to a complete pelvic exam) to screen for ovarian cancer (44).

Reproductive cancers, including breast, cervical and ovarian cancer, cause hundreds of thousands of individuals to die prematurely. While investments and cytology-based programs to prevent and treat these cancers, such as

cervical cancer, have improved and have led to significant reductions in high-income countries, in low- and middle-income countries, the mortality rate continues to be high. In low- and middle-income countries, cytology-based programs are very challenging to implement, and the coverage is poor after the implementation. Therefore, new screening and treatment strategies have to be considered to increase coverage in all countries and, in the long term, reduce their incidence and mortality (46).

There is some variability in recommendations by expert groups about the frequency and the age to begin screening for prostate cancer. The two most commonly used tests to screen for prostate cancer are the PSA blood test and digital rectal examination (DRE) (47).

The European Randomized Study of Screening for Prostate Cancer (ERSPC) suggests that screening may contribute to the reduction of mortality related to prostate cancer by at least 9% (relative reduction). Substantial observational evidence indicates a decrease in mortality and prevalence of advanced stages of prostate cancer, which is attributed to the introduction of PSA screening (48).

### STIs testing

There are an estimated 374 million new sexually transmitted infections (STIs) each year, with 1 of 4 STIs including chlamydia, gonorrhoea, syphilis, and trichomoniasis. In 2020, 1.5 million people were newly infected with HIV (49). STIs are a significant public health problem. If not treated, they can lead to serious long-term health consequences such as cancers and infertility (50).

When used correctly, condoms are the most effective means of preventing an STI. Testing, early diagnosis, and treatment of STIs can reduce the complications associated with the disease and the incidence by reducing onward transmission of infection to sexual contacts (51,52).

One of the critical barriers to controlling and preventing sexually transmitted infections (STIs) is the lack of reliable and cost-effective point-of-care tests (POCTs), allowing one-visit diagnosis and treatment. Since the "Sexually Transmitted Diseases Diagnostics Initiative" was housed in WHO 15 years ago, progress has been achieved in developing rapid diagnostic tests (RDTs) for syphilis. However, for chlamydial, gonococcal infections, and trichomoniasis, there are still no tests that meet the major requirements for POCTs (53).

In addition, testing services must be adapted to left-behind populations' unique needs and contexts. People's abilities and motivations to test (intrapersonal factors) are influenced by broader socioeconomic, political, and cultural factors. Currently the global strategy on strengthening HIV prevention focuses more on identification and addressing the barriers in testing such as its availability, accessibility, inclusivity, convenience and confidentiality (54,55). HIV self-testing (HIVST), which can be ordered online, provided at clinics, or purchased at pharmacies or drug stores, offers people a discreet and convenient way to test and has become the standard approach to HIV diagnosis in many high burden settings. Essential to the success of HIVST is linking it to referral to services when there is a positive test and other services. Innovations in self-care have also linked HIVST with digital technologies that provide health information and digital health appointments (56).

Internet-accessible STI tests (e-STIs) are an effective measure for increasing the use of STI tests, including chlamydia testing, among young people who do not use conventional services. Psychosocial and contextual factors make it difficult to access sexual health services in person. Online sexual health services, including e-STI testing, can overcome some of these obstacles by allowing users to overcome the stigma, embarrassment, and disadvantages of in-person care. Usually, e-STI tests require users to order online postal self-sampling kits,

instructions on how to collect their own samples, return samples to a laboratory, and be informed of their results by short text message or phone (57).

However, a systematic and focused approach to research and applying results in policies and practices are needed to ensure that e-health benefits all population groups and that the information is timely, clinically valid, and effective, including preventive approaches for various groups with different needs (58).

### Self-care in abortion and family planning

Family planning includes information about methods to decide whether to have children, how many, and the timing (59). It was recognized by the Programme of Action of the International Conference on Population and Development as a basic right (60). It contributes to decreasing unwanted pregnancies, unsafe abortions, and maternal and infant mortality (61). Barriers to family planning include transportation and socioeconomic limitations, misinformation, stigma, limited access to contraceptive methods, and social attitudes regarding gender roles (59). As part of the 2030 Agenda for Sustainable Development, it was proposed to expand access to family planning, especially modern contraceptive methods (60). With the COVID-19 pandemic in 2020, 12 million women did not have access to family planning services, and 1.4 million pregnancies were unwanted in 115 countries (62).

Self-care in family planning includes access to the emergency contraceptive pill without medical prescription, self-administered contraceptive injection, pills, fertility self-screening using ovulation prediction kits (63), access to external and internal condoms (64). The WHO recommends self-injectable contraception as it is an easy, convenient, and private method. Also, self-administration has shown greater signs of adherence than when applied by a healthcare provider (65). To provide its successful reception, access to information, training for the application, and the availability of products for the entire population are necessary (65). Additionally, regulatory standards vary across countries, and many countries have regulatory hurdles that limit people's use of self-care in the context of family planning. WHO guidelines offer a framework for countries to change policies and ensure people have access to safe and effective self-care products (4).

Induced abortion performed by a trained person and following the WHO recommendations for the stage of pregnancy is safe and effective (66). Access to safe abortion is an essential health service that must be affordable and accessible for all pregnant people (67). It contributes to the person's autonomy in making decisions about their own reproductive health (68). Access to abortion must be comprehensive, which means it must provide accurate information, care during and after the abortion, security, respect for their dignity and privacy (67).

Worldwide, 45% of induced abortions are unsafe, 97% of them occur in developing countries, and they represent an important cause of preventable maternal mortality (66). Unsafe abortion involves physical and psychological complications for pregnant people and financial and social difficulties for the community (66). People seek dangerous alternatives to abortion due to very restrictive laws, stigma, lack of accessibility to services, cultural or religious beliefs, lack of protocols, high costs, and lack of access to reliable information (68).

Self-managed medical abortion is a non-invasive, inexpensive, safe, and effective self-care procedure that can be performed from home, with or without the support of a healthcare provider (69). It is accessible for vulnerable populations that find it difficult to access a medical facility due to transportation, costs, legal restrictions, or stigma from healthcare workers (67,70). Self-managed abortion during the first trimester is safe when pregnant people have accurate information on dosing and when support needs to be sought (69). Access to information,

instructions in clear and simple language, support from trained personnel if required, and access to drugs in pharmacies is needed (64).

Physiological effects such as bleeding and cramps occur during and after a self-administered pill abortion, and adverse effects such as vomiting, headache, diarrhea, and fever are likely to occur (71). It is essential for people to be aware of these signs and symptoms and to be able to identify the warning signs or, if the abortion was not completed, to seek further medical assistance (72). Under self-care measures, antibiotics and analgesics such as paracetamol or ibuprofen can be used following the appropriate doses. Additional measures such as rest, staying hydrated, and using menstrual products for the bleedings are also recommended (73). It is important that immediately after the abortion, the person has access to contraceptives and birth control (72).

### Self-care in pregnancy

Self-care in pregnancy includes topics supporting the good health of a pregnant individual and a fetus, such as the use of drugs or nutritional supplements, physical activity, and sexual intercourse during pregnancy, among others. It is important not only for a pregnancy course but also for types of delivery (74). Diet and physical activity during pregnancy reduce gestational weight and lower the odds of cesarean section, reported by the International Weight Management in Pregnancy (i-WIP) Collaborative Group (75). There is much research and recommendations about pregnancy diets available. The American College of Obstetricians (ACOG) and Gynaecologists explains how essential proper nutrition and supplementations during pregnancy are; why pregnant people should not “eat for two”; how many calories pregnant individuals should eat, and many more (76). The importance of diet and nutrition quality during pregnancy was also evaluated in the Nutrition Checklist created by the International Federation of Gynaecology and Obstetrics (FIGO). This checklist is one of the recommended tools to identify the regular consumption of unbalanced diets or other issues relating to nutrition and weight (75,77).

In 2016, “WHO recommendations on antenatal care for a positive pregnancy experience” were published. The main aim was “to put women at the center of care, enhancing their pregnancy experience and ensuring that babies have the best possible start in life.” WHO recommended a minimum of eight contacts with the health system and supportive communication, but these guidelines also advised to have contact with a doctor and take care of oneself. For example, “it is recommended that each pregnant woman carries her own case notes during pregnancy to improve continuity, quality of care and her pregnancy experience.” Additional tests, including checking blood pressure and urine and detecting the fetal heart rate, also improve the course of pregnancy (78). Self-monitoring of glucose levels in pregnancy is vital in controlling gestational diabetes, especially if it is supported with adequate information from diabetes educators and physicians (79).

### Self-care in menstrual management

As defined by WHO and UNICEF Joint Monitoring Programme (JMP), menstrual health management states that people who menstruate should use clean material to absorb menstrual blood, which they can change privately as per their own convenience and use soap and water for maintaining hygiene. They should have access to safe and convenient methods to dispose of the used menstrual product. It also states that people who menstruate should have basic knowledge and management skills related to the menstrual cycle to live with dignity and without any discomfort or fear (80). However, the definition on paper does not hold true for millions of young people around the world. A research study involving adolescent girls in the Amassoma community found that they didn't have adequate knowledge about menstruation. 45.5% of them were unaware that menstruation is a normal physiological process, while 58.9% never knew that the blood came from the uterus and not from the

vagina. Another study on menstrual pain shows that only 8.9% of the target population approached a doctor for period pain management.

In contrast, others either used some unknown medicine given by their mothers or used non-pharmacological methods like heating pads or sleeping as the means to relieve the pain and discomfort. It also mentioned that not seeing a doctor was associated with increased dysmenorrhea and complications. Still, the adolescent females in the study never considered it important due to a lack of awareness (81). Therefore, the on-ground assessment shows that incomplete and inaccurate knowledge about menstruation is a huge barrier to personal hygiene and self-care during menstruation (82).

Studies have reported that Nearly 70% of females in Afghanistan and 98% of females in Gujarat, India, do not wash their bodies during menstruation. 25% of females in Nepal are made to stay in a separate room during menstruation (83–85). Another study states that, in the absence of household toilets in India in villages, females use bathing areas, community toilets, or open fields for menstruation management, which directly impacts their physical and mental health (86). Inaccessibility to menstrual products is another concern in the rural parts of the world. Most females in such areas use reusable cotton cloths. Access to menstrual products like pads and tampons is limited in many parts of the world, while a lot of people who menstruate do not use it because of the high cost and the shame associated with it. Another concern is the lack of knowledge of the proper disposal of sanitary products. Unawareness leads to disposal by flushing the menstrual waste in toilets or by dumping used cloth in rivers. Such practices are harmful not only to the environment but also to the health of the person who menstruates (87). According to a study in Bangladesh, husbands decide whether the female should see a doctor regarding their menstrual concerns, while the majority of the females hesitate to discuss their health concerns during periods like period pains and rashes with their family (88). Good menstrual health management and self-care are a major public health concern because, if neglected, it leads to reproductive tract infections like UTIs, rashes, toxic shock syndrome, and other health concerns (89–91). These statistics highlight that it is challenging for females to manage their physical health during periods. At the same time, mental stress associated with shame and lack of awareness also persists.

Unawareness and unpreparedness for menstruation can be directly linked to factors like societal stigma, discriminatory social norms, gender inequality, unavailability of resources, myths, and taboos (87,92). In many places across the world, people during menstruation are restricted to cooking, playing sports, indulging in sexual intercourse, eating specific items like pickles, bathing, and worshipping (93). Such restrictions are still prevalent because people regard menstruation as dirty, depriving people who menstruate of their rights to choose and live with dignity (94). People who menstruate find it hard to cope with self-health and care in such circumstances. It impacts their quality of life by limiting their freedom, mobility, and choices, affecting attendance, participation in school and society, compromising their health and self-care, and causing mental stress and anxiety.

Self-care during menstruation can empower a person who menstruates to take care of themselves and their body. But unawareness about menstruation, lack of knowledge of one's own body anatomy, unavailability of resources to maintain hygiene like clean water, safe menstrual products, and privacy prevent people who menstruate from having the right to self-care and health during menstruation. Important steps need to be taken at all levels to promote self-care and good reproductive health. The Sustainable Development Goals SDG3 (Good Health and Well-being), SDG4 (Quality Education), SDG5 (Gender Equality), SDG6 (Clean Water and Sanitation), SDG8 (Decent Work and Economic Growth), and SDG12 (Responsible Consumption and Production) are directly linked to menstrual health management through promotion of personal hygiene and self-care and health (92).

### Self-care in menopause

Menopause is defined as the permanent cessation of menstruation over a period of 12 months. Natural menopause, not due to the surgical removal of ovaries, is characterized by a physiologic decrease in estrogen as a result of natural aging. The age at which menopause is attained depends on the country. However, research has demonstrated that lower and middle-income countries tend to report earlier average ages than higher-income countries. For example, in Norway, the average age of menopause is approximately 52.73 years (95). On the other hand, the average age of menopause in Egypt and India is 46.6 years for both countries (96,97). With people aged 60 years or over totaling 962 million in 2017, a figure that is expected to double by 2050 to reach nearly 2.1 billion, it is likely that aging will have a significant impact on future health policies (98). Considering increased life expectancy in the world, women spent about one-third of their life in the postmenopausal period.

The time of menopause and perimenopause is marked by numerous changes in virtually all aspects of health. Due to declining estrogen levels, women experience many short-term vasomotor, urogenital, and psychogenic symptoms. Vasomotor symptoms include hot flashes, migraines, and palpitations. Urogenital symptoms may consist of declining libido, urethral atrophy, and vaginal atrophy, which predisposes to pelvic organ prolapse (99). Psychogenic symptoms can include a predisposition to depression, anxiety, and low self-confidence/self-esteem due to the changes they experience. And because of the loss of the protective effects of estrogen, women are at an increased risk of cardiovascular disease, osteoporosis, breast cancer, and reproductive cancers.

Attitudes about different aspects of menopause are variable. Studies conducted in Malaysia and Pakistan have shown that most women are relieved by the onset of menopause because it signifies the end of menses (100,101). However, the same studies revealed uncertainty and dissatisfaction with perimenopausal symptoms, such as inability to work, irritability, and sexual satisfaction (100–102). In all three groups, the majority of women reported wanting to know more about menopausal symptoms and healthcare, demonstrating a lack of widespread, available knowledge on the subject. Despite the acceptance of menopause as a natural and even welcomed phase of life, many women don't seek healthcare for their symptoms. This is due to its perception as a natural stage, taboos related to reproductive health issues in the elderly, and embarrassment.

Interventional healthcare for postmenopausal women improves their quality of life in terms of vasomotor and psychogenic symptoms. However, self-care education may also help postmenopausal women cope more appropriately with menopause problems and enhance their self-efficacy. A study conducted in Iran shows that group training of menopausal women in self-care strengthens their knowledge, promotes sharing of experiences reduces menopausal symptoms, thus leading to an improved quality of life (103). Empowerment and self-efficacy are crucial for self-care in menopause. According to Sarah Langwe's theory, there are five stages in empowerment: equity, access, awareness, participation, and control (104). The empowerment of menopausal women to make decisions about their health can reduce their symptoms in the long run. However, the decision-making freedom of women is often limited, with an average of 55 percent of married or in-union women aged 15 to 49 having decision-making power regarding their sexual and reproductive health and rights (105). On the other hand, self-efficacy is an individual's belief in the ability to perform the desired function. Empowerment and self-efficacy are interlinked, and advances in one can lead to advances in the other.

For the long-term complications of menopause, self-care strategies include the prevention and management of osteoporosis and vulvovaginal atrophy and decreasing the risks of breast and reproductive cancers. Osteoporosis can be prevented and managed with self-administered calcium supplementation, selective estrogen receptor modulators (SERMs), hormonal therapy, and bisphosphonates. However, the European

Menopause and Andropause Society (EMAS) warns about the increased risk of kidney stones in calcium supplementation (106). Also, hormonal therapy has been found to increase the risk of breast and other reproductive cancers (107). Therefore, it is crucial that screening guidelines for osteoporosis in postmenopausal women be enforced, in order to identify those at the greatest risk and minimize complications from lack of treatment, such as fractures or overtreatment. The same applies to breast and reproductive cancers, as previously mentioned.

Vaginal health is an essential component of active and healthy aging in women at midlife and beyond. The integrity of the urogenital system also impacts many elements of postmenopausal health, including sexual function. Due to the natural aging process and decreased levels of hormones, symptoms of vulvovaginal atrophy have a strong impact on quality of life, sexual function, and satisfaction. However, embarrassment associated with the discussion of an intimate condition, along with perceptions of it as usual, and fears of hormones constitute major barriers to treatment. Many topical estrogen treatments are equally effective in reversing symptoms associated with the condition, such as dyspareunia. In addition, their presence in a topical form makes them easy to use for self-care (108).

#### Role of digital health in reproductive self-care

The shortage of the health workforce is projected to be 18 million by 2030 (109), and about 4.3 billion people of reproductive age lack access to adequate sexual and reproductive health (SRH) services (110). These projections suggest an urgent need for innovative solutions to transform health systems to address this healthcare crisis (111). However, there has been an increased interest in self-care over the years using digital health technologies like telehealth, mobile health, and virtual consultations (110). If effectively utilized in SRH self-care to prevent health risks, promote wellness, and manage illnesses (112), these digital technologies would produce a tremendous impact.

For instance, using digital health interventions in HIV self-testing, HIV pre-exposure prophylaxis (more commonly known as PrEP), as well as providing information on contraception, abortion, low-cost maternal services, and nearest health facilities (113) has provided patients and health professionals with objective data for shared decision-making (114). And this has also proven to increase the productivity of health workers even in low- and middle-income countries (115).

Digital health promotes anonymity, convenience, and ease of access to healthcare (116) for people seeking self-motivated health behaviors. The four principles of digital self-care are user experience, data privacy and confidentiality, quality assurance, and accountability and responsibility. Thus, expanding coverage to stigmatized and vulnerable populations would require the use of these digital health interventions optimized with the interests of both patients and caregivers and minimal risks of privacy intrusion (117). Digital health offers many positive impacts, but barriers and disparities to use such as data costs, lack of access in rural areas, or the lack of smartphones can pose a risk for health disparities if they are not considered in the design and scale-up of digital self-care (118).

#### Health literacy and self-care

Health literacy means the ability to understand and comprehend health knowledge, communicate, and use it to live a life of better quality and choice (119). Health literacy is directly linked to self-care as it empowers people to access health information and resources to understand their bodies, make safer and informed choices regarding health and seek and use the healthcare system to maintain their well-being (120). Therefore, it assures people to think and work to improve their physical and mental health. However, achieving health literacy is a challenging

goal. According to a study, in developed nations like the US, nearly one-third to one-half of the adults do not have adequate health literacy, so they are not competent enough to access and use health information for themselves. The European Health Literacy Survey stated similar data where 12% of all participants had inadequate health literacy. It showed that limited health literacy in Europe is not just an issue related to the minority group (121).

Evidence has shown that people with low health literacy make less healthy choices for themselves, have riskier behavior, have poorer health, have less self-care, and undergo more hospitalization. This impacts the individual health of a person and drains the human and financial resources of the health system. Reducing the prevalence of non-communicable diseases (NCDs) is linked with health literacy. If people are aware of the genetic and modifiable risk factors like smoking and obesity for health diseases, they can make necessary behavioral changes to delay the incidence of NCDs. The same applies to reproductive healthcare. Therefore, strengthening awareness about self-health and care and being responsible for one's body is the goal of health literacy.

The European Health Literacy Survey also shed some light on the social determinants of health literacy. According to the survey, lower education, low social status, and low income are some factors that lead to weak health literacy, limiting people's ability to look after themselves. Therefore, it is crucial to understand the intricate relationship between health literacy and self-care. Self-care attitude can develop quickly amongst the population if they can realize that self-care will help them live a good quality life in terms of physical, mental, and social determinants. At once, they will be able to save more resources like money and time. Overall, good health literacy ensures self-care guaranteeing better health and living standards. No specific instrument exists for the measurement of sexual and reproductive health literacy impeding data collection, comparativeness, and addressing the existing gaps (122).

So, adequate measures need to be taken by health workers, the education system, and through policies that promote health literacy and address gaps in knowledge to have a self-reliant, aware, and responsible population to achieve better individual and global health (121).

### Barriers to self-care and vulnerable populations

Self-care interventions can improve access for groups that have limitations in access to sexual and reproductive health services (123). However, it is necessary to ensure access to adequate and complete information, training if necessary, and adaptations for the needs and barriers of populations have to be taken into account (2). Access to qualified health personnel who can advise or provide help in case of complications, access to products and affordable costs are necessary, and link self-care to services. In addition, more research is needed regarding the implementation of self-care programs in humanitarian contexts that allow exploring all possible limitations (124). There are laws limiting self-care interventions or have not been updated to be implemented efficiently (123). Therefore, It is recommended that countries work to update national self-care guidelines and use WHO Consolidated guidelines as a framework (4).

It has been shown that health literacy is essential for adherence to treatment or prevention procedures in chronic diseases (125). Besides, much self-care information distributed in print media requires literacy skills (124). All this represents a more significant challenge for vulnerable populations such as indigenous communities, low-income populations, older people, people with disabilities, or people who do not have access to education (123,126). The information must be understandable and accessible to each group in the population (2). This can be addressed by using different media to disseminate information, including but not limited to telephone hotlines, youth organizations, and outreach programs (127).

In addition to access to self-care information, social support is required. Stigma, discrimination, and acts of violence cause people to stop requesting medical assistance or counseling among vulnerable groups such as the LGBTQIA+ community, the indigenous community, people with disabilities, sex workers, the older people, youth, women, and people living with HIV (124) (128). It has been observed that there is a lack of awareness and adaptation of health services, hindering the achievement of a universal scope (129). In addition, policies in different countries limit access to medical assistance to vulnerable groups such as people who immigrate (126).

### References:

1. World Health Organization. What do we mean by self-care? 2019 May 15 [cited 2021 Dec 20]; Available from: <http://www.who.int/reproductivehealth/self-care-interventions/definitions/en/>
2. World Health Organization. WHO Guideline on Self-Care Interventions for Health and Well-Being. Geneva: World Health Organization; 2021.
3. What is Self-Care? [Internet]. Self-Care Trailblazer Group. 2020 [cited 2021 Dec 22]. Available from: <https://www.psi.org/project/self-care/self-care/>
4. World Health Organization. WHO Consolidated Guideline on Self-Care Interventions for Health: Sexual and Reproductive Health and Rights [Internet]. 2019 [cited 2021 Dec 22]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/325480/9789241550550-eng.pdf?ua=1>
5. World Health Organization. Comprehensive Cervical Cancer Control: A guide to essential practice [Internet]. 2014 [cited 2021 Dec 22]. Available from: [http://apps.who.int/iris/bitstream/10665/144785/1/9789241548953\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/144785/1/9789241548953_eng.pdf?ua=1)
6. Human papillomavirus (HPV) and cervical cancer [Internet]. [cited 2021 Dec 26]. Available from: [https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-\(hpv\)-and-cervical-cancer](https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer)
7. Bower M, Powles T, Newsom-Davis T, Thirlwell C, Stebbing J, Mandalia S, et al. HIV-associated anal cancer: has highly active antiretroviral therapy reduced the incidence or improved the outcome? *J Acquir Immune Defic Syndr*. 2004 Dec 15;37(5):1563–5.
8. federico. Is HPV Curable? [Internet]. 2019 [cited 2021 Dec 27]. Available from: <https://healthclinics.superdrug.com/is-hpv-curable/>
9. Humphries HE, Williams JN, Blackstone R, Jolley KA, Yuen HM, Christodoulides M, et al. Multivalent liposome-based vaccines containing different serosubtypes of PorA protein induce cross-protective bactericidal immune responses against *Neisseria meningitidis*. *Vaccine*. 2006 Jan 9;24(1):36–44.
10. Centers for Disease Control and Prevention (CDC). Recommendations on the use of quadrivalent human papillomavirus vaccine in males--Advisory Committee on Immunization Practices (ACIP), 2011. *MMWR Morb Mortal Wkly Rep*. 2011 Dec 23;60(50):1705–8.
11. Human papillomavirus (HPV) and cervical cancer [Internet]. [cited 2021 Dec 26]. Available from: [https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-\(hpv\)-and-cervical-cancer](https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer)
12. Comprehensive Cervical Cancer Control: A Guide to Essential Practice. Geneva: World Health Organization; 2014.
13. Toh ZQ, Kosasih J, Russell FM, Garland SM, Mulholland EK, Licciardi PV. Recombinant human papillomavirus nonavalent vaccine in the prevention of cancers caused by human papillomavirus. *Infect*

Drug Resist. 2019 Jul 4;12:1951–67.

14. Human Papillomavirus (HPV) vaccines [Internet]. National Cancer Institute. 2021 [cited 2021 Dec 27]. Available from: <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-vaccine-fact-sheet>
15. Waheed D-E-N, Schiller J, Stanley M, Franco EL, Poljak M, Kjaer SK, et al. Human papillomavirus vaccination in adults: impact, opportunities and challenges - a meeting report. BMC Proc. 2021 Aug 12;15(Suppl 7):16.
16. Dorji T, Nopsopon T, Tamang ST, Pongpirul K. Human papillomavirus vaccination uptake in low-and middle-income countries: a meta-analysis. EClinicalMedicine. 2021 Apr;34:100836.
17. Gallagher KE, LaMontagne DS, Watson-Jones D. Status of HPV vaccine introduction and barriers to country uptake. Vaccine. 2018 Aug 6;36(32 Pt A):4761–7.
18. Gallagher KE, Howard N, Kabakama S, Mounier-Jack S, Griffiths UK, Feletto M, et al. Lessons learnt from human papillomavirus (HPV) vaccination in 45 low- and middle-income countries. PLoS One. 2017 Jun 2;12(6):e0177773.
19. World Health Organization. Electronic address: [sageexecsec@who.int](mailto:sageexecsec@who.int). Human papillomavirus vaccines: WHO position paper, May 2017-Recommendations. Vaccine. 2017 Oct 13;35(43):5753–5.
20. Walsh CD, Gera A, Shah M, Sharma A, Powell JE, Wilson S. Public knowledge and attitudes towards Human Papilloma Virus (HPV) vaccination. BMC Public Health. 2008 Oct 23;8:368.
21. Ortiz RR, Smith A, Coyne-Beasley T. A systematic literature review to examine the potential for social media to impact HPV vaccine uptake and awareness, knowledge, and attitudes about HPV and HPV vaccination. Hum Vaccin Immunother. 2019 Apr 11;15(7-8):1465–75.
22. Remme M, Narasimhan M, Wilson D, Ali M, Vijayasingham L, Ghani F, et al. Self care interventions for sexual and reproductive health and rights: costs, benefits, and financing. BMJ [Internet]. 2019 Apr 1 [cited 2022 Jan 31];365. Available from: <https://www.bmj.com/content/365/bmj.11228.abstract>
23. Galvin AM, Garg A, Griner SB, Moore JD, Thompson EL. Health Literacy Correlates to HPV Vaccination Among US Adults Ages 27-45. J Cancer Educ [Internet]. 2022 Jan 13 [cited 2022 Jan 31]; Available from: <https://pubmed.ncbi.nlm.nih.gov/35022987/>
24. Ecartot F, Crepaldi G, Juvin P, Grabenstein J, Del Giudice G, Tan L, et al. Pharmacy-based interventions to increase vaccine uptake: report of a multidisciplinary stakeholders meeting. BMC Public Health. 2019 Dec 18;19(1):1–6.
25. Cook N. Testicular cancer: testicular self-examination and screening. Br J Nurs [Internet]. 2000 [cited 2021 Dec 22];9(6). Available from: <https://pubmed.ncbi.nlm.nih.gov/11051881/>
26. Hall KL, Dewar MA, Perchalski J. Screening for gynecologic cancer. Vulvar, vaginal, endometrial, and ovarian neoplasms. Prim Care [Internet]. 1992 Sep [cited 2021 Dec 22];19(3). Available from: <https://pubmed.ncbi.nlm.nih.gov/1410066/>
27. Edwards CL, Tortolero-Luna G, Linares AC, Malpica A, Baker VV, Cook E, et al. Vulvar intraepithelial neoplasia and vulvar cancer. Obstet Gynecol Clin North Am. 1996 Jun;23(2):295–324.
28. Che MN, Moey SF, Lim BC. Validity and Reliability of Health Belief Model Questionnaire for Promoting Breast Self-examination and Screening Mammogram for Early Cancer Detection. Asian Pac J Cancer Prev

- [Internet]. 2019 Sep 1 [cited 2021 Dec 22];20(9). Available from: <https://pubmed.ncbi.nlm.nih.gov/31554389/>
29. Sarah Marshall, Martin J. Gabica, Kathleen Romito, Kevin C. Kiley. Vaginal Self-Examination (VSE) [Internet]. University of Michigan Health. 2020. Available from: <https://www.uofmhealth.org/health-library/hw235326#hw235364>
  30. National Vulvodynia Association. Vulvar Self-Examination [Internet]. 2021. Available from: <https://www.nva.org/learnpatient/vulvar-self-examination/>
  31. Johnson TC. What Is a Vaginal Self-Exam? WebMD [Internet]. 2021; Available from: <https://www.webmd.com/women/guide/what-is-a-vaginal-self-exam>
  32. Mayo Clinic Staff. Testicular exam [Internet]. Mayo Clinic. 2020. Available from: <https://www.mayoclinic.org/tests-procedures/testicular-exam/about/pac-20385252>
  33. Preti M, Selk A, Stockdale C, Bevilacqua F, Vieira-Baptista P, Borella F, et al. Knowledge of Vulvar Anatomy and Self-examination in a Sample of Italian Women. J Low Genit Tract Dis [Internet]. 2021 Apr 1 [cited 2021 Dec 22];25(2). Available from: <https://pubmed.ncbi.nlm.nih.gov/33470738/>
  34. Reproductive Cancers [Internet]. U.S. Department of Health & Human Services. [cited 2021 Dec 22]. Available from: <https://opa.hhs.gov/reproductive-health/reproductive-cancers>
  35. Gordon PB. Breast cancer screening. Canadian Family Physician. 2019 Jul;65(7):457.
  36. Practice Bulletin Number 179: Breast Cancer Risk Assessment and Screening in Average-Risk Women. Obstetrics and Gynecology [Internet]. 2017 Jul [cited 2021 Dec 22];130(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/28644335/>
  37. Committee opinion no. 625: management of women with dense breasts diagnosed by mammography. Obstetrics and Gynecology [Internet]. 2015 Mar [cited 2021 Dec 22];125(3). Available from: <https://pubmed.ncbi.nlm.nih.gov/25730253/>
  38. Practice Bulletin No 182: Hereditary Breast and Ovarian Cancer Syndrome. Obstetrics and Gynecology [Internet]. 2017 Sep [cited 2021 Dec 22];130(3). Available from: <https://pubmed.ncbi.nlm.nih.gov/28832484/>
  39. Monticciolo DL, Newell MS, Moy L, Niell B, Monsees B, Sickles EA. Breast Cancer Screening in Women at Higher-Than-Average Risk: Recommendations From the ACR. Journal of the American College of Radiology [Internet]. 2018 Mar [cited 2021 Dec 22];15(3 Pt A). Available from: <https://pubmed.ncbi.nlm.nih.gov/29371086/>
  40. New recommendations for screening and treatment to prevent cervical cancer [Internet]. World Health Organization. [cited 2021 Dec 22]. Available from: <https://www.who.int/news/item/06-07-2021-new-recommendations-for-screening-and-treatment-to-prevent-cervical-cancer>
  41. Cervical cancer [Internet]. BMJ Best Practice. [cited 2021 Dec 22]. Available from: <https://bestpractice.bmj.com/topics/en-us/259>
  42. Ogale Y, Yeh PT, Kennedy CE, Toskin I, Narasimhan M. Self-collection of samples as an additional approach to deliver testing services for sexually transmitted infections: a systematic review and meta-analysis. BMJ Global Health. 2019 Apr 1;4(2):e001349.
  43. Self-sampling for human papillomavirus testing [Internet]. WHO. World Health Organization; 2019 [cited 2022 Jan 31]. Available from:

<http://www.who.int/reproductivehealth/self-care-interventions/human-papillomavirus-testing/en/>

44. Global Cancer Observatory: Cancer today [Internet]. WHO: International Agency for Research on Cancer. [cited 2021 Dec 22]. Available from: <http://gco.iarc.fr/today/home>
45. Rauh-Hain JA, Krivak TC, del Carmen MG, Olawaiye AB. Ovarian Cancer Screening and Early Detection in the General Population. *Reviews in Obstetrics and Gynecology*. 2011;4(1):15.
46. World Health Organization. New guidelines for the screening and treatment of cervical cancer. 2014 Nov 28 [cited 2021 Dec 22]; Available from: <https://www.who.int/reproductivehealth/topics/cancers/guidelines/en/>
47. Hoffman RM. Screening for prostate cancer [Internet]. UpToDate. [cited 2021 Dec 22]. Available from: <https://www.uptodate.com/contents/screening-for-prostate-cancer>
48. Schröder FH, Hugosson J, Roobol MJ, Tammela TLJ, Zappa M, Nelen V, et al. Screening and prostate cancer mortality: results of the European Randomised Study of Screening for Prostate Cancer (ERSPC) at 13 years of follow-up. *Lancet*. 2014 Dec 6;384(9959):2027–35.
49. Global HIV & AIDS statistics — Fact sheet [Internet]. UNAIDS. [cited 2022 Jan 31]. Available from: <https://www.unaids.org/en/resources/fact-sheet>
50. Sexually transmitted infections (STIs) [Internet]. [cited 2021 Dec 27]. Available from: [https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-\(stis\)](https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis))
51. Holmes KK, Levine R, Weaver M. Effectiveness of condoms in preventing sexually transmitted infections. *Bull World Health Organ*. 2004 Jun;82(6):454–61.
52. Mayaud P, Mabey D. Approaches to the control of sexually transmitted infections in developing countries: old problems and modern challenges. *Sex Transm Infect*. 2004 Jun;80(3):174–82.
53. WHO | point-of-care diagnostic tests (POCTs) for sexually transmitted infections (STIs). 2019 Nov 28 [cited 2021 Dec 27]; Available from: <https://www.who.int/reproductivehealth/topics/rtis/pocts/en/>
54. Laprise C, Bolster-Foucault C. Understanding barriers and facilitators to HIV testing in Canada from 2009–2019: A systematic mixed studies review. *Can Commun Dis Rep*. 2021 Mar 4;47(2):105–25.
55. Bolsewicz K, Valley A, Debattista J, Whittaker A, Fitzgerald L. Factors impacting HIV testing: a review—perspectives from Australia, Canada, and the UK. *AIDS Care*. 2015;27(5):570–80.
56. STAR at ICASA 2021 [Internet]. HIV Self-testing Africa Initiative. 2021 [cited 2022 Jan 31]. Available from: <https://www.psi.org/project/star/star-at-icasa-2021/>
57. Wilson E, Leyrat C, Baraitser P, Free C. Does internet-accessed STI (e-STI) testing increase testing uptake for chlamydia and other STIs among a young population who have never tested? Secondary analyses of data from a randomised controlled trial. *Sex Transm Infect*. 2019;95(8):569–74.
58. Minichiello V, Rahman S, Dune T, Scott J, Dowsett G. E-health: potential benefits and challenges in providing and accessing sexual health services. *BMC Public Health*. 2013 Aug 30;13:790.
59. World Health Organization. Family planning/contraception methods [Internet]. 2020. Available from: <https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception>
60. United Nations. Family Planning and the 2030 Agenda for Sustainable Development: Data Booklet [Internet]. 2019. Available from: [https://www.un.org/en/development/desa/population/publications/pdf/family/familyPlanning\\_DataBooklet\\_20](https://www.un.org/en/development/desa/population/publications/pdf/family/familyPlanning_DataBooklet_20)

19.pdf

61. United Nations Population Fund. Family planning [Internet]. United Nations Population Fund. 2021. Available from: <https://www.unfpa.org/family-planning>
62. United Nations Population Fund. Impact of COVID-19 on Family Planning: What we know one year into the pandemic [Internet]. 2021 [cited 2021 Dec 22]. Available from: [https://www.unfpa.org/sites/default/files/resource-pdf/COVID\\_Impact\\_FP\\_V5.pdf](https://www.unfpa.org/sites/default/files/resource-pdf/COVID_Impact_FP_V5.pdf)
63. Yeh PT, Kennedy CE, Van der Poel S, Matsaseng T, Bernard L, Narasimhan M. Should home-based ovulation predictor kits be offered as an additional approach for fertility management for women and couples desiring pregnancy? A systematic review and meta-analysis. *BMJ Global Health*. 2019 Apr 1;4(2):e001403.
64. World Health Organization. WHO Guideline for Self-Care Interventions for Health and Well-Being [Internet]. 2021 [cited 2021 Dec 22]. Available from: <https://app.magicapp.org/#/guideline/Lr21gL>
65. World Health Organization. WHO recommendations on self-care interventions, Self-administration of injectable contraception [Internet]. 2020. Available from: [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiy3KDohLz0AhWKIGoFHbrHCqkQFnoECAYQAQ&url=https%3A%2F%2Fapps.who.int%2Firis%2Frest%2Fbitstreams%2F1280108%2Fretrieve&usq=AOvVaw2zuNclc0KyE\\_Jp8BmM3ZEZ](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiy3KDohLz0AhWKIGoFHbrHCqkQFnoECAYQAQ&url=https%3A%2F%2Fapps.who.int%2Firis%2Frest%2Fbitstreams%2F1280108%2Fretrieve&usq=AOvVaw2zuNclc0KyE_Jp8BmM3ZEZ)
66. World Health Organization. Abortion [Internet]. 2021 [cited 2021 Dec 22]. Available from: <https://www.who.int/news-room/fact-sheets/detail/abortion>
67. IPAS. Women's access to safe abortion in the 2030 Agenda for Sustainable Development: Advancing maternal health, gender equality, and reproductive right [Internet]. 2015 [cited 2021 Dec 22]. Available from: <https://www.redaas.org.ar/archivos-recursos/2030%20agenda%20and%20women%20access%20to%20safe%20abortion%20-%20ipas%20%20fact%20sheet%20-%20%202015.pdf>
68. Vekemans M, de Silva U, Hurwitz M. Access to safe abortion A tool for assessing legal and other obstacles. International Planned Parenthood Federation [Internet]. 2008 [cited 2021 Dec 22]; Available from: [https://www.ippf.org/sites/default/files/access\\_to\\_safe\\_abortion.pdf](https://www.ippf.org/sites/default/files/access_to_safe_abortion.pdf)
69. World Health Organization. WHO recommendations on self-care interventions, Self-management of medical abortion [Internet]. 2020 [cited 2021 Dec 22]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/332334/WHO-SRH-20.11-eng.pdf>
70. Cárdenas R, Labandera A, Baum SE, Chiribao F, Leus I, Avondet S, et al. "It's something that marks you": Abortion stigma after decriminalization in Uruguay. *Reprod Health*. 2018 Sep 10;15(1):1–11.
71. Ipas. How to Have an Abortion with Pills [Internet]. 2021 [cited 2021 Dec 22]. Available from: [https://www.ipas.org/wp-content/uploads/2021/04/How-to-have-an-abortion-with-pills\\_ASCTW2E21.pdf](https://www.ipas.org/wp-content/uploads/2021/04/How-to-have-an-abortion-with-pills_ASCTW2E21.pdf)
72. Marie Stopes UK. Medical Abortion Aftercare: Support for your recovery at home [Internet]. 2019 [cited 2021 Dec 22]. Available from: <https://www.mschoices.org.uk/media/3290/telemedicine-medical-aftercare-booklet-2020.pdf>
73. Planned Parenthood of Michigan. Caring for Yourself After an Abortion [Internet]. Planned Parenthood of Michigan. 2021 [cited 2021 Dec 22]. Available from: <https://www.plannedparenthood.org/planned-parenthood-michigan/healthcare/abortion-services/caring-for-yourself-after-an-abortion>
74. Artal-Mittelmark R. Self-Care During Pregnancy [Internet]. MSD Manual. [cited 2021 Dec 22]. Available from:

<https://www.msmanuals.com/home/women-s-health-issues/normal-pregnancy/self-care-during-pregnancy>

75. International Weight Management in Pregnancy (i-WIP) Collaborative Group. Effect of diet and physical activity based interventions in pregnancy on gestational weight gain and pregnancy outcomes: meta-analysis of individual participant data from randomised trials. *BMJ* [Internet]. 2017 Jul 19 [cited 2021 Dec 22];358. Available from: <https://pubmed.ncbi.nlm.nih.gov/28724518/>
76. Nutrition During Pregnancy [Internet]. American College of Obstetricians and Gynaecologists. [cited 2021 Dec 22]. Available from: <https://www.acog.org/en/womens-health/faqs/nutrition-during-pregnancy>
77. The FIGO Nutrition Checklist [Internet]. International Federation of Gynaecology and Obstetrics. [cited 2021 Dec 22]. Available from: <https://www.figo.org/news/figo-nutrition-checklist>
78. World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience [Internet]. 2016 [cited 2021 Dec 22]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/250796/97892415?sequence=1>
79. Negrato CA, Zajdenverg L. Self-monitoring of blood glucose during pregnancy: indications and limitations. *Diabetol Metab Syndr*. 2012 Dec 22;4(1):1–5.
80. UNICEF. Strategy for Water, Sanitation and Hygiene 2016–2030 [Internet]. 2016 [cited 2021 Dec 22]. Available from: <https://www.unicef.org/media/91266/file/UNICEF-Strategy-for-WASH-2016-2030.pdf>
81. Eryilmaz G, Ozdemir F. Evaluation of menstrual pain management approaches by Northeastern Anatolian adolescents. *Pain Management Nursing*. 2009 Mar;10(1):40–7.
82. Adika VO, Ayinde MO, Jack-Ide IO. Self care practices of menstrual hygiene among adolescents school going girls in Amassoma Community, Bayelsa State. *International Journal of Nursing and Midwifery*. 2013 Aug 31;5(5):99–105.
83. Mahon T, Fernandes M. Menstrual hygiene in South Asia: a neglected issue for WASH (water, sanitation and hygiene) programmes. *Gender & Development* [Internet]. 2010 Feb 25 [cited 2021 Dec 22]; Available from: <https://www.tandfonline.com/doi/abs/10.1080/13552071003600083>
84. Tiwari H, Oza UN, Tiwari R. Knowledge, attitudes and beliefs about menarche of adolescent girls in Anand district, Gujarat. *Eastern Mediterranean Health Journal* [Internet]. 2006 [cited 2021 Dec 22];12(3-4). Available from: <https://pubmed.ncbi.nlm.nih.gov/17037713/>
85. Karki KB, Poudel PC, Rothchild J. 2017 SCOPING REVIEW AND PRELIMINARY MAPPING Menstrual Health and Hygiene Management in Nepal. *Population Services International Nepal* [Internet]. 2017 Jun. Available from: <https://maverickcollective.org/wp-content/uploads/2017/06/Scoping-Review-and-Preliminary-Mapping-of-Menstrual-Health-in-Nepal.pdf>
86. Fernandes M. Freedom of mobility: experiences from villages in the states of Madhya Pradesh & Chhattisgarh India. In IRC; 2010 [cited 2021 Dec 22]. Available from: <https://www.ircwash.org/resources/freedom-mobility-experiences-villages-states-madhya-pradesh-chhattisgarh-india-paper>
87. Kaur R, Kaur K, Kaur R. Menstrual Hygiene, Management, and Waste Disposal: Practices and Challenges Faced by Girls/Women of Developing Countries. *Journal of Environmental and Public Health*. 2018 Feb 20;2018:1730964.
88. Seymour K. Bangladesh: Tackling menstrual hygiene taboos [Internet]. UNICEF; 2008 Jan [cited 2021 Dec 22]. Available from:

<https://www.washinschoolsindex.com/storage/articles/4ghI8FBcN5pPrdp8eB0hHxPZKSs1rUQ8CoZpNodr.pdf>

89. Khanna A, Goyal RS, Bhawsar R. Menstrual Practices and Reproductive Problems: A Study of Adolescent Girls in Rajasthan. *Journal of Health Management [Internet]*. 2005 Apr 1 [cited 2021 Dec 22];7(1). Available from: <https://journals.sagepub.com/action/cookieAbsent>
90. Narayan KA, Srinivasa DK, Peltó PJ, Veeramal S. Puberty rituals, reproductive knowledge and health of adolescent schoolgirls in South India. *Asia-Pacific Population Journal*. 2001 Mar 31;16(2):225–38.
91. Rajaretnam T, Hallad JS. Menarche, menstrual problems and reproductive tract infections among adolescents in rural and urban areas of northern Karnataka in India. In 2010 [cited 2021 Dec 22]. Available from: <https://epc2010.princeton.edu/papers/100360>
92. UNICEF. Guidance on Menstrual Health and Hygiene [Internet]. 2019 Mar [cited 2021 Dec 22]. Available from: <https://www.unicef.org/documents/guidance-menstrual-health-and-hygiene>
93. Hennegan J, Shannon AK, Rubli J, Schwab KJ, Melendez-Torres GJ. Women's and girls' experiences of menstruation in low- and middle-income countries: A systematic review and qualitative metasynthesis. *PLoS Medicine [Internet]*. 2019 May [cited 2021 Dec 22];16(5). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6521998/>
94. Jogdand K, Yerpude P. A community based study on menstrual hygiene among adolescent girls. *Indian Journal of maternal and child health*. 2011;13(3):1–6.
95. Gottschalk MS, Eskild A, Hofvind S, Gran JM, Bjelland EK. Temporal trends in age at menarche and age at menopause: a population study of 312 656 women in Norway. *Human Reproduction*. 2020 Feb 28;35(2):464–71.
96. Abdelwahed Shams-Eldin A. Knowledge, Attitude and Severity of Menopausal Symptoms Among Women Attending Primary Health Care Centers in Cairo, Egypt. *Al-Azhar Medical Journal*. 2018 Apr 1;47(2):423–34.
97. Prasad JB, Tyagi NK, Verma P. Age at menopause in India: A systematic review. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*. 2021 Jan 1;15(1):373–7.
98. Department of Economic and Social Affairs of the United Nations. World Population Ageing Highlights [Internet]. 2017 [cited 2022 Jan 31]. Available from: [https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2017\\_Highlights.pdf](https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2017_Highlights.pdf)
99. National Guideline Alliance (UK). The effectiveness of topical oestrogen for managing pelvic organ prolapse with vaginal atrophy. In: *Urinary incontinence and pelvic organ prolapse in women: management*. National Institute for Health and Care Excellence (UK); 2019.
100. Syed Alwi SAR, Brohi IB, Awi I. Perception of menopause among women of Sarawak, Malaysia. *BMC Womens Health*. 2021 Feb 22;21(1):1–10.
101. Memon FR, Jonker L, Qazi RA. Knowledge, attitudes and perceptions towards menopause among highly educated Asian women in their midlife. *Post reproductive health [Internet]*. 2014 Dec [cited 2022 Jan 31];20(4). Available from: <https://pubmed.ncbi.nlm.nih.gov/25473108/>
102. Bello FA, Daramola OO. Attitude to the Menopause and Sex amongst Middle-Aged Women in a Family Medicine Clinic in Ibadan, Nigeria. *Obstet Gynecol Int [Internet]*. 2016 Nov 8 [cited 2022 Jan 31];2016. Available from: <https://www.hindawi.com/journals/ogi/2016/2031056/>
103. Bahri N, Saljooghi S, Noghabi AD, Moshki M. Effectiveness of the teach-back method in improving

- self-care activities in postmenopausal women. *Przegląd Menopauzalny = Menopause Review*. 2018 Mar;17(1):5.
104. Kafaee-Atrian M, Sadat Z, Nasiri S, Izadi-Avanji FS. The Effect of Self-care Education Based on Self-efficacy Theory, Individual Empowerment Model, and Their Integration on Quality of Life among Menopausal Women. *International Journal of Community Based Nursing and Midwifery*. 2022 Jan;10(1):54.
  105. UNFPA. Ensure universal access to sexual and reproductive health and reproductive rights: Measuring SDG Target 5.6 [Internet]. 2020 [cited 2022 Jan 31]. Available from: <https://www.unfpa.org/sites/default/files/pub-pdf/UNFPA-SDG561562Combined-v4.15.pdf>
  106. Cano A, Chedraui P, Goulis DG, Lopes P, Mishra G, Mueck A, et al. Calcium in the prevention of postmenopausal osteoporosis: EMAS clinical guide. *Maturitas* [Internet]. 2018 Jan [cited 2022 Jan 31];107. Available from: <https://pubmed.ncbi.nlm.nih.gov/29169584/>
  107. Velentzis LS, Egger S, Banks E, Canfell K. Menopausal hormone therapy: Characterising users in an Australian national cross-sectional study. *PLoS One* [Internet]. 2021 Aug 11 [cited 2022 Jan 31];16(8). Available from: <https://pubmed.ncbi.nlm.nih.gov/34379634/>
  108. Nappi RE, Martini E, Cucinella L, Martella S, Tiranini L, Inzoli A, et al. Addressing Vulvovaginal Atrophy (VVA)/Genitourinary Syndrome of Menopause (GSM) for Healthy Aging in Women. *Frontiers in Endocrinology* [Internet]. 2019; Available from: <https://www.frontiersin.org/articles/10.3389/fendo.2019.00561/full>
  109. Health workforce [Internet]. [cited 2021 Dec 27]. Available from: <https://www.who.int/health-topics/health-workforce>
  110. Starrs AM, Ezeh AC, Barker G, Basu A, Bertrand JT, Blum R, et al. Accelerate progress-sexual and reproductive health and rights for all: report of the Guttmacher-Lancet Commission. *Lancet*. 2018 Jun 30;391(10140):2642–92.
  111. Chattu VK, Lopes CA, Javed S, Yaya S. Fulfilling the promise of digital health interventions (DHI) to promote women's sexual, reproductive and mental health in the aftermath of COVID-19. *Reprod Health*. 2021 Jun 4;18(1):112.
  112. Ronquillo Y, Meyers A, Korvek SJ. Digital Health. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2021.
  113. McCoy SI, Packel L. Lessons from early stage pilot studies to maximize the impact of digital health interventions for sexual and reproductive health. *Mhealth*. 2020 Jul 5;6:22.
  114. Meskó B, Drobni Z, Bényei É, Gergely B, Gyórfy Z. Digital health is a cultural transformation of traditional healthcare. *Mhealth*. 2017 Sep 14;3:38.
  115. Nhavoto JA, Grönlund Å, Klein GO. Mobile health treatment support intervention for HIV and tuberculosis in Mozambique: Perspectives of patients and healthcare workers. *PLoS One*. 2017 Apr 18;12(4):e0176051.
  116. The duality of digital self-care: Decreasing health worker workloads, while increasing access to care for clients [Internet]. CHWI. 2021 [cited 2021 Dec 27]. Available from: <https://chwi.njn.com/news-insights/the-duality-of-digital-self-care-decreasing-health-worker-workloads-while-increasing-access-to-care-for-clients>
  117. Health workforce [Internet]. [cited 2021 Dec 27]. Available from:

<https://www.who.int/health-topics/health-workforce>

118. Matthew Honeyman, David Maguire, Harry Evans and Alisha Davies. Digital technology and health inequalities: a scoping review [Internet]. Public Health Wales NHS Trust; 2020 [cited 2022 Jan 31]. Available from:  
<https://phw.nhs.wales/publications/publications1/digital-technology-and-health-inequalities-a-scoping-review/>
119. Nutbeam D. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promot Int.* 2000 Sep 1;15(3):259–67.
120. Manganello J, Shone LP. Health Literacy. ACT for Youth Center of Excellence [Internet]. 2013 [cited 2021 Dec 22]; Available from: [http://www.actforyouth.net/resources/rf/rf\\_health-literacy\\_0513.pdf](http://www.actforyouth.net/resources/rf/rf_health-literacy_0513.pdf)
121. World Health Organization. Global status report on noncommunicable diseases [Internet]. WHO Library Cataloguing-in-Publication Data; 2011 [cited 2021 Dec 22]. Available from:  
[https://www.who.int/nmh/publications/ncd\\_report\\_full\\_en.pdf](https://www.who.int/nmh/publications/ncd_report_full_en.pdf)
122. Ma X, Yang Y, Wei Q, Jiang H, Shi H. Development and validation of the reproductive health literacy questionnaire for Chinese unmarried youth. *Reprod Health.* 2021 Nov 13;18(1):1–11.
123. Self-care interventions for health [Internet]. World Health Organization. 2021 [cited 2021 Dec 22]. Available from: <https://www.who.int/news-room/fact-sheets/detail/self-care-health-interventions>
124. Tran NT, Tappis H, Moon P, Christofield M, Dawson A. Sexual and reproductive health self-care in humanitarian and fragile settings: where should we start? *Conflict and health.* 2021 Apr 7;15(1):22.
125. RobatSarpoooshi D, Mahdizadeh M, Siuki HA, Haddadi M, Robatsarpoooshi H, Peyman N. The Relationship Between Health Literacy Level and Self-Care Behaviors in Patients with Diabetes. *Prometeo.* 2020 May 5;11:129–35.
126. Hasstedt K, Desai S, Ansari-Thomas Z. Immigrant Women's Access to Sexual and Reproductive Health Coverage and Care in the United States [Internet]. The Commonwealth Fund; 2018 Nov [cited 2021 Dec 22]. Available from:  
[https://www.commonwealthfund.org/sites/default/files/2018-11/Hasstedt\\_immigrant\\_women\\_access\\_covera ge\\_ib.pdf](https://www.commonwealthfund.org/sites/default/files/2018-11/Hasstedt_immigrant_women_access_covera ge_ib.pdf)
127. Kurniasih N. Model of Adolescent Reproductive Health Information Dissemination in Bandung West Java Indonesia. In 2018. Available from:  
[https://www.researchgate.net/publication/322845400\\_Model\\_of\\_Adolescent\\_Reproductive\\_Health\\_Informati on\\_Dissemination\\_in\\_Bandung\\_West\\_Java\\_Indonesia](https://www.researchgate.net/publication/322845400_Model_of_Adolescent_Reproductive_Health_Informati on_Dissemination_in_Bandung_West_Java_Indonesia)
128. Alencar Albuquerque G, de Lima Garcia C, da Silva Quirino G, Alves MJH, Belém JM, dos Santos Figueiredo FW, et al. Access to health services by lesbian, gay, bisexual, and transgender persons: systematic literature review. *BMC Int Health Hum Rights.* 2016 Jan 14;16(1):1–10.
129. World Health Organization, Department of Reproductive Health and Research. United Nations Population Fund (UNFPA). Promoting sexual and reproductive health for persons with disabilities [Internet]. World Health Organization; 2020 Jan [cited 2021 Dec 22]. Available from:  
<http://www.who.int/reproductivehealth/publications/general/9789241598682/en/>