

## Perspective



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## Polycystic ovarian syndrome: diagnostic challenges in resource-poor settings (Ugandan perspectives)

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## Abstract

*Polycystic ovarian syndrome is the most common cause of anovulatory infertility accounting for up to 40% of the reasons for visiting a doctor. The Ugandan government has recognized infertility as a major problem affecting over five million people, yet polycystic ovarian syndrome is not included in the Ugandan Clinical Guidelines, hence it's not part of the Uganda minimum healthcare package. Lack of guidelines means diagnosis is a challenge and many cases have delayed or no diagnosis. Early diagnosis is good for awareness of associated risks such as infertility, dysfunctional uterine bleeding, endometrial cancer, obesity, diabetes, dyslipidemia, hypertension, and cardiovascular diseases. Clinical laboratories are handy in the diagnosis as well as follow-up of PCOS cases and in most rural settings, these are lacking, confounded by the lack of skilled frontline workers such as gynecologists and reproductive endocrinologists.*

## Perspectives

**Perspective in PCOS diagnosis and challenges in Uganda:** polycystic ovarian syndrome (PCOS) is the most common cause of anovulatory infertility affecting 5-13% of women of reproductive age [1]. Anovulation affects up-to 76% of women with PCOS, accounting for up to 40% of cheap presentation to doctors [2,3]. PCOS is a genetically-determined primary ovarian disorder resulting in hypersecretion of androgens which starts in fetal life. The typical clinical and biochemical features are the effects of exposure to androgen excess at or before puberty [4]. It is one of the biggest challenges in reproductive medicine due to its complexity, progression aspect, and the consequences as it entails in women's lives: from adolescence to post-menopause [5]. The standard of care of PCOS in a resource-poor setting may be challenging owing to the limitation in laboratory infrastructures, and the relevant personnel. The 2004 Rotterdam criteria are by far the most commonly used diagnostic criteria in the diagnosis of PCOS and requires the presence of at least two

out of the following three features: clinical and/or biochemical hyperandrogenism, chronic oligo-anovulation, and polycystic ovarian morphology, after exclusion of other endocrine disorders, such as hyperprolactinemia, thyroid dysfunction late-onset congenital adrenal hyperplasia, or androgen-secreting tumors [6]. The initial evaluation of patients suspected of PCOS may include, at a minimum: a testosterone panel (total and free or bioactive testosterone) and dehydroepiandrosterone sulfate, thyroid-stimulating hormone (TSH), prolactin, and 17-hydroxyprogesterone (17-HP). A transvaginal sonogram should also be performed in all patients, both to assess for the presence of polycystic ovaries and to evaluate the endometrial thickness as a screen for excessive endometrial thickening, determining the need for an endometrial biopsy. An estimated 30% of PCOS patients will merit an endometrial biopsy, either because they demonstrate amenorrhea or have an endometrial thickness of greater than 7 mm on ultrasonography [7].

Metabolic evaluation including basal and 2-h glucose and insulin levels after the oral administration of 75g glucose and a lipid profile should also be performed in all patients with PCOS, considering the high prevalence of glucose intolerance, hyperinsulinemia, and metabolic syndrome among these women [7]. Laboratory medicine is essential for disease detection, surveillance, control, and management. However, access to quality-assured laboratory diagnosis has been a challenge in low-income and middle-income countries (LMICs) resulting in delayed or inaccurate diagnosis and ineffective treatment with consequences for patient safety [8]. Most low-income countries have their laboratories concentrated in town areas. In Laos People's Republic, laboratories are only present in the capital, Vientiane [9]. This is not any different from Uganda where most of the health center level IVs, general hospitals, and some of the Regional Referral Hospitals do not have functional hormonal assays. It is therefore, a common practice that many Ugandans source prescribed tests through

private laboratories that are located mainly in major towns. Distance to access care points and poverty create inequality and inequity in PCOS care in the country. Large scale effort has been implemented in purchasing medical products to help reduce mortality in many low resource settings. The dominant purchaser of medical products may be the United Nations (UN) agencies (e.g. United Nations International Children's Emergency Fund (UNICEF), United Nations Development Programme (UNDP), United Nations Population Fund (UNFPA)); major international not-for-profit aid agencies (e.g. Bill and Melinda Gate's Foundation and Cooperative for Assistance and Relief [10]. This kind of funding may not be available for PCOS, a condition that predominantly causes infertility, as if infertility is not looked at as a problem amidst high fertility.

The acquisition of a major contract with a nationalized health-care system will necessitate successful integration into their procurement system [10]. The Ugandan government has recognized infertility as a major problem affecting an estimated five million people and it's included in the Uganda national policy guidelines and service standards for sexual and reproductive health and rights [11]. Amidst all this, PCOS management is not included in the Uganda clinical guidelines and as such, it's not one of the conditions to be managed under the Uganda Minimum Healthcare Package yet anecdotal evidence shows that quite a significant number of women who present with anovulatory infertility in Uganda have features of excess androgens, a key feature of PCOS. PCOS should be viewed as a complex metabolic disorder that requires a global therapeutic approach since it is a risk factor for diseases such as diabetes and endometrial cancer and possibly cardiovascular disease [10]. Diagnosis of PCOS makes the patient aware of possible fertility concerns, dysfunctional bleeding, endometrial cancer, obesity, diabetes, dyslipidemia, hypertension, and theoretical increased risk of cardiovascular diseases [12]. Most developing nations have extreme shortages of trained medical personnel [9]. This leads to task shifting to less skilled less knowledgeable providers

such as the clinical officers and some non-specialist physicians. In some settings as high as 75% of cases are not diagnosed due to the variability of patient presentation and lack of providers' knowledge [12]. Compounding shortage of trained personnel is the recruitment effort by non-governmental organizations and programs, which tends to divert health professionals from frontline practice into their projects by offering them higher salaries and benefits [9].

## Conclusion

In conclusion; much as the true prevalence of PCOS in Uganda is unknown, anecdotal data shows that the condition is quite prevalent among infertile women in the country. The difficulties in the diagnosis may be related to incomplete evaluation as required by 2004 Rotterdam diagnostic criteria due to the lack of laboratory facilities and standard ultrasound scanning modalities. The cost of laboratory evaluations has created inequality in PCOS care. What remains unresolved is whether there will be a cheaper way of evaluating PCOS patients in low resource settings.

## Competing interests

The authors declare no competing interests.

## Authors' contributions

All the authors have read and agreed to the final manuscript.

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