

Laparoscopic Evaluation of Infertile Women in Aminu Kano Teaching Hospital Kano Nigeria: A 5 Year Review

MA Jabbo^{1*}, AA Habib², OT Fawziyya³, KM Abdullahi⁴ and U Abba⁵

¹Department of Obstetrics and Gynaecology, 261 Nigerian Air Force Reference, Hospital Bauchi, Nigeria

²Department of Obstetrics and Gynaecology, Rasheed Shekoni Teaching Hospital, Dutse -Nigeria

³Department of Community Medicine, University of Ilorin Teaching Hospital, Nigeria

⁴Department of Obstetrics and Gynaecology, Abubakar Tafawa Balewa University Teaching Hospital, Bauchi, Nigeria

⁵Department of Obstetrics and Gynaecology, Yobe State Specialist Hospital, Damaturu, Nigeria

***Corresponding author:** Mubarak Abdulkareem Jabbo, Department of Obstetrics and Gynaecology, Aminu Kano Teaching Hospital, Nigeria Department of Obstetrics and Gynaecology, 261 Nigerian Air Force Reference, Hospital Bauchi, Nigeria

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ABSTRACT

Laparoscopy is an invaluable investigative tool in evaluating infertile women. Its role is particularly important when tubo-peritoneal factors are suspected in the aetiology of female factor infertility. The objective of this study is to describe the patterns and frequency of pelvic pathology seen during laparoscopic evaluation of infertile women in Aminu Kano Teaching Hospital (AKTH), Nigeria over a 5-year period. It was a retrospective cross-sectional study. The records of patients who had laparoscopy and dye test in AKTH within the study period were retrieved and recorded in a proforma. Data was analyzed using SPSS version 20. P value was set at 0.05. A total of 137 infertile women were evaluated during the study period. Their age ranged from 17-45 years with mean age of 27.9 ± 2.3 years. Secondary infertility accounted for 83 (60.6%) while primary infertility accounted for 54 (39.4%). The commonest abnormality seen was tubal occlusion 86 (62.8%). Most cases of tubal occlusion were seen among patients with secondary infertility 56 (40.9%) compared to patients with primary infertility 30 (21.9%) and this was statistically significant ($X^2 11.47, P = <0.000$). The commonest complication reported was upper abdominal pain 7 (5.1%).

Conclusion: This study revealed that tubal disease is a common factor responsible for infertility in patients with both primary and secondary infertility. Hence, laparoscopy is useful in the evaluation of cases of infertility when tubal and pelvic factors are implicated.

Keywords: Laparoscopy; Pattern; Prevalence; Primary Infertility; Secondary Infertility

Abbreviations: ER: Estrogen Receptor; FIGO: International Federation of Gynecology and Obstetrics; HSG: Hysterosalpingography; PID: Pelvic Inflammatory Disease; SPSS: Statistical Package for Social Sciences; X^2 : Chi Square

Introduction

Infertility is a public health problem both in developed and developing countries. In developed countries infertility affects 5-15% of married couples [1]. In Nigeria, the incidence varies from 20-30% [1]. Infertility is defined as the inability of a couple to conceive after one year of unprotected and adequate sexual intercourse [2]. It can be

primary in which case the couple has no previous conception or secondary when there is prior conception irrespective of the outcome. The female factor contributes 40-45% in aetiology of infertility, while male factors contribute 30-40% [2]. In 15-20% of cases, the aetiology cannot be found, and a diagnosis of unexplained infertility is made [2]. Infertility in females can be caused by various factors. According to FIGO manual (1990), causes of female infertility include: tubal and

peritoneal factors (25-35%), ovulatory factor (30-40%), and endometriosis (1-10%) [2]. In sub-Saharan Africa, pelvic infections largely constitute the cause of infertility in several places [3-5].

These stem from sexually transmitted diseases, post-abort and post-delivery complications. Pelvic-peritoneal adhesions mostly sequels of prior infections from organisms like Chlamydia trachomatis and Neisseria gonorrhoea [6]. They cause anatomic and physiological distortion of tubal functions in terms of ovum pick-up, fertilization and zygote transport between the ovary and the uterus. The diagnostic evaluation of tubal patency in infertile women can be accomplished by performing laparoscopy, hysterosalpingogram (HSG) or a saline sonogram [3,4]. Every procedure has some advantages or disadvantages. But laparoscopy has the advantage of allowing for the most comprehensive evaluation of tubal and peritubal factors. With diagnostic laparoscopy, a direct visual access to inner pelvic anatomy is achieved without resorting to major abdominal surgery.

The necessity of laparoscopy in an infertility work up is though controversial. Laparoscopy is invasive and expensive. It is done after male factor and ovulatory functions have been found normal or corrected. The indications of its use in infertility are: where HSG findings are abnormal, failure to conceive after reasonable period (6 months) even with normal HSG, unexplained infertility, women who have comorbid pelvic pathology (PID endometriosis) [2]. Laparoscopy is usually combined with transcervical methylene blue dye test to ascertain patency of the fallopian tubes [7]. In developing countries particularly sub-Saharan Africa, gynaecologic laparoscopy was introduced in the 1970's through collaboration with donor agencies. Since then, it has been evolving and now been used to offer therapeutic services. [3,4] Its role in evaluation of tubo-peritoneal factors in female infertility in Nigeria is important. This is because of infective tubo-peritoneal disease as the main aetiological factor of infertility in the region [8,9]. In AKTH, Kano, laparoscopy was started in 2001 albeit erratically until the 2008 when video monitors were procured, and the minimal access gynaecology unit was established. Presently it forms part of the investigative tools in evaluating infertile women. The present study was undertaken to describe the different anatomical and pathological pelvic conditions observed in infertile female patients during laparoscopy. The findings would serve as a baseline data for references in future researches.

Material and Methods

This study was a retrospective cross-sectional study carried out on infertile women who had laparoscopy and dye test in Aminu Kano Teaching Hospital between 1st January 2009 and 31st December 2013.

The patients' identification data were retrieved from the theatre operation register. Their case notes were also retrieved, and necessary information obtained including the biodata, diagnosis of infertility (primary or secondary), intraoperative findings and post operative complications. The information retrieved were entered in a proforma. All patients who attended the gynaecological clinic with a diagnosis of infertility were included in the study. All cases with incomplete information in their biodata clinical history or laparoscopic findings were excluded from the study. Data was analyzed using the SPSS version 20 and P value was set at 0.05. The results were presented in tables and figures.

Results

During the period under review, a total of 142 patients had laparoscopy and dye test for infertility. Of these, 137 folders were retrieved from the records department giving a file retrieval rate of 96.5%. (Table 1) shows the age distribution of the patients. The age varied between 17-45 years. The mean age was 27.9 ± 2.3 years. (Figure 1) shows the percentages of the types of infertility for the laparoscopy. Most of the cases for the laparoscopic evaluation of infertility were because of secondary infertility 83 (60.6%) while cases of primary infertility constituted 54 (39.4%). The relative age distribution among patients between primary and secondary infertility is shown in (Figure 2). (Table 2) shows the findings on laparoscopy. Tubal occlusion was the commonest abnormality found among all groups of infertile women accounting for 86 (62.8%) of cases. Tubal occlusion was bilateral in 62 (45.3%) cases, and unilateral in 24 (17.5%) cases. The tubes were found to be normal and patent in 51 (37.2%) cases. Pelvic adhesions of varying degree of severity were seen in 48 (35.1%) cases. Additional pelvic pathology seen were uterine fibroid of various sizes in 25 patients (18.2%). additionally, hypoplastic uterus and streak gonads were seen in 12 patients (8.7%) all of whom were among the primary infertility group. Frozen pelvis was seen in 8 cases (5.8%), while polycystic ovary was seen in 6 cases (4.3%).

Table 1: Age distribution of all cases that had Laparoscopy.

Age Group (years)	Frequency (n)	Percentage (%)
<20	5	3.6
20-24	30	21.9
25-29	31	22.6
30-34	45	32.9
≥35	26	19
Total	137	100%

Note: Mean age= 27.9 ± 2.3 years.

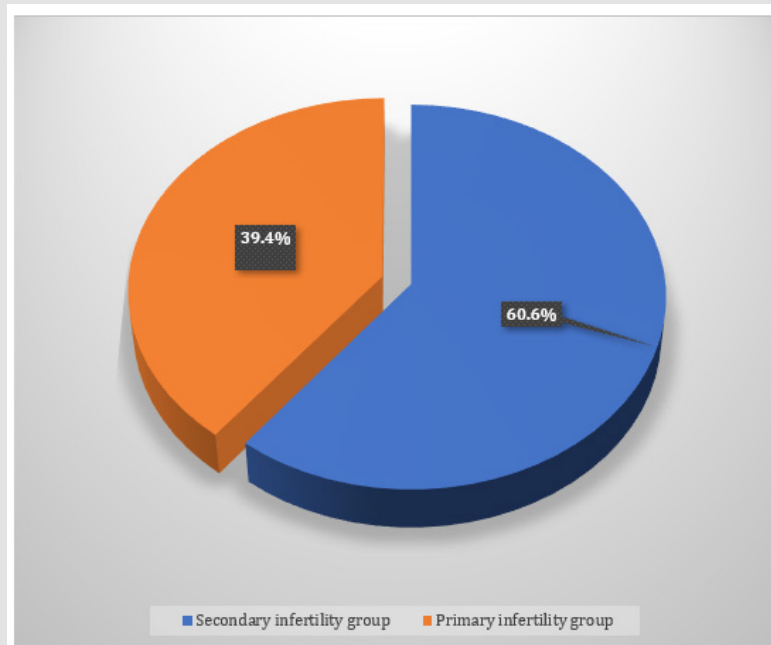


Figure 1: Type of Infertility Indicated for Laparoscopy.

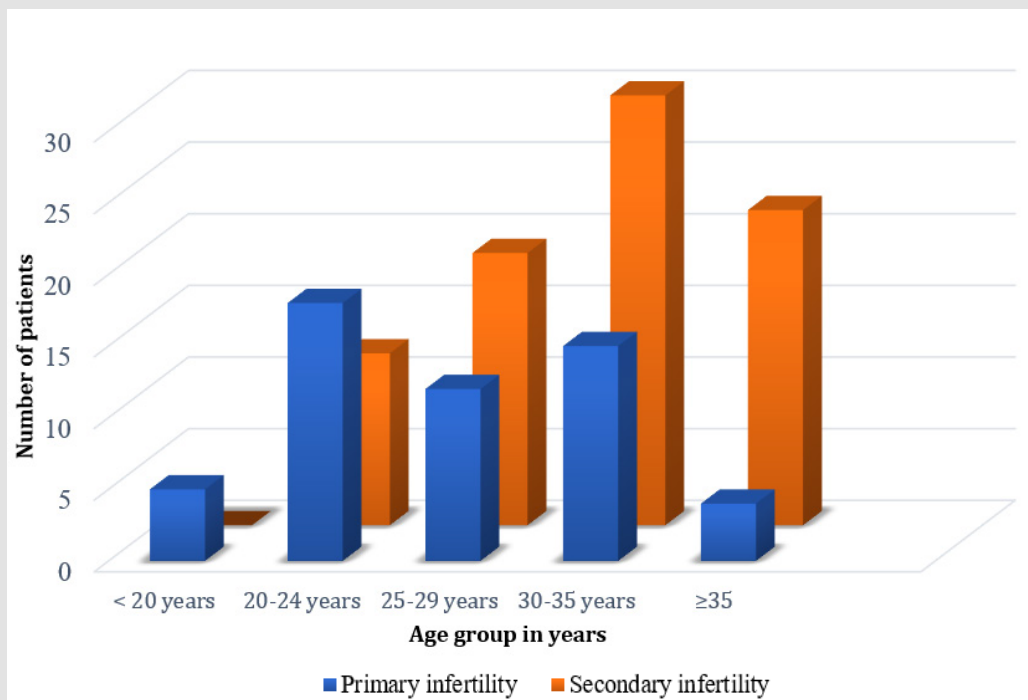


Figure 2: Age distribution of patients among primary and secondary infertility.

Table 2: Findings on laparoscopy.

Findings	Frequency (n=137)	Percentage (%)
Bilateral patent tubes	51	37.2
Bilateral tubal block	62	45.3
Unilateral tubal block	24	17.5
Pelvic adhesions	48	35.1
Fibroid	25	18.2
Hypoplastic uterus/Streak gonads	12	8.7
Frozen pelvis	8	5.8
Polycystic ovary	6	4.3

Most cases of tubal occlusion were seen among women with secondary infertility 56 (40.9%) of cases as compared to women with primary infertility 30 (21.9%). This difference was statistically significant (X^2 11.47, P = <0.000) as shown in (Table 3). Among the cases of pelvic adhesions seen, 37 (27.0%) occurred among women with secondary infertility, while 11 cases (8.0%) were seen in women with primary infertility which was also statistically significant (X^2 17.07, P = <0.000). There was no statistically significant difference in the findings of normal tubes between primary infertility group and secondary infertility group (X^2 0.516, P = 0.473). Table 4 shows the problems encountered during the procedure and the post operative complications. These include failed insufflations in 1 (0.7%) patient and cervical stenosis in 3 (2.2%). The other complications are upper abdominal/flank pain in 7 (5.1%) patients and chest pain in 3 (2.2%) patients which occurred while they were resting in the ward before discharge.

Table 3: Details of tubal pathology and pelvic adhesions detected in cases of primary and secondary infertility.

Pelvic Pathology Seen	Primary Infertility		Secondary Infertility		X^2	P value
	(n)	(%)	(n)	(%)		
Tubal occlusion	30	(21.9)	56	(40.9)	11.47	<0.000
Pelvic adhesions	11	(8.0)	37	(27.0)	17.08	<0.000
Normal patent tubes	12	(8.8)	8	(5.8)	0.516	0.473

Table 4: Problems/complications encountered.

Problems/complications	Frequency (n)	Percentage (%)
Failed insufflation	1	0.7
Cervical stenosis	3	2.2
Upper abdominal/flank pain	7	5.1

Discussion

The mean age at presentation in this study was 27.9 years. This is comparable to some studies also in Northern Nigeria, Jos 26.7 years

[10] and Gombe 28.6 years. [3] However, the mean age in this study was lower compared to studies in Southern Nigeria, Abakaliki 30.9 years, [11] Benin 33.2 years [12] and Sagamu 31.4 years [13]. This could probably be as a result of prolonged periods of voluntary infertility from delayed age of marriage in these regions compared to our study. Female age is considered as the single most important determinant of both spontaneous and assisted conception rates. [14] There is no universally accepted definition of advanced reproductive age, in part because the effect of increasing age occurs as a continuum rather than as a threshold effect. However, in infertility terms, 35 years is considered as the age limit [14]. The predominance of secondary infertility in this study (60.6%) agrees with many studies in Nigeria. [3,7,10,13,15,16] This is opposed to the trend in the developed countries where primary infertility is commoner than secondary infertility. [17,18] Primary infertility in sub-Saharan Africa has been attributed to the higher prevalence of poorly managed previous pelvic infections or pelvic inflammatory diseases. [19,15] Tubal occlusion was the highest abnormality found among all groups of infertile women (62.8%), followed by pelvic adhesions (35.1%) both of which were higher among women with secondary infertility and the difference was statistically significant P = <0.000. This finding is consistent with many other studies done in Nigeria. [3,7,10,13,20] Tubal occlusion has been shown to be the commonest cause of female infertility in Africa [19]. It highlights the role of prior infectious morbidity on fertility. Additionally, sexually transmitted disease as a contributor to tubal infection and obstruction, as well as extra contributions from pelvic infections caused by puerperal sepsis, post abortal sepsis and post operative septic morbidities likewise play a role. [3-5] In a previous study carried out in Nigeria, it was reported that there is a positive correlation between secondary infertility, and induced abortion, post-abortal sepsis, manual removal of placenta as well as previous prolonged unsupervised labour [16]. This could also explain why most cases of tubal occlusion and pelvic adhesions occurred among women with secondary infertility in our study. Uterine fibroid and uterine anomalies are important causes of infertility. In this study, uterine fibroid was found in (18.2%) of cases which was comparable to some studies in Nigeria, Jos (17.9%) [10] and Abakaliki (17.7%) [11] but lower than the prevalence reported in Sagamu (32.8%). [13] However, the prevalence reported in studies done in Europe was much lower (7.8%). [21] This may be as a result of racial distribution of uterine fibroid with higher prevalence among Africans. [22] There is over expression of oestrogen receptor (ER) alpha genotype and aromatase among the Blacks compared to Caucasians. [22] The role of uterine fibroid in infertility is controversial. It is estimated that fibroid may be associated with infertility in 5-10% and are possibly the only cause of infertility in 1-3%. [23] Proposed mechanisms by which uterine fibroid might adversely affect fertility include, cornual myomas compressing interstitial segment of the tube, dysfunctional uterine contractility, and poor regional blood flow resulting in focal endometrial attenuation. [21] Congenital anomalies of the female

reproductive system are associated with higher rates of infertility. Incidence of uterine congenital anomaly is not accurately known probably as a result of inaccurate diagnostic methods, lack of uniform system of classification, and also many of them being asymptomatic. The prevalence in this study was (8.7%) which is similar to another study. [24] Depending on the severity, women with congenital anomalies of the uterus can still conceive but may suffer from some obstetrics complications such as recurrent pregnancy losses. All the cases of uterine anomalies in this study were seen among primary infertile patients probably because there were coexisting streak gonads which may not be compatible with conceiving.

Ovarian pathologies such as Polycystic Ovarian Disease cause anovulation leading to infertility. In this study, 4.3% of cases of polycystic ovary were seen, although there was no correlating ultrasound evidence. Similar finding was reported in Southwest Nigeria, Ibadan 4.2%. [15] However, higher prevalence was recorded in other studies, [10,20,25] while Sagamu (in Southwest Nigeria) reported a lower prevalence of 2.5%. [13] In one study, it was found that diagnosis of ovulatory dysfunction was more common in younger age group. [26] A possible explanation for this may be that those with irregular cycles tend to present early for investigation and treatment. [27] Laparoscopy did not demonstrate any tubal abnormality in (37.2%) of cases as seen in other studies in Nigeria. [3,10,15,16] This contrasts with studies in developed countries where normal patent tubes are seen in higher percentages [17,18]. The incidence of infective cause of tubal obstruction as an aetiology of infertility in developed countries are not as high as seen in developing countries [24]. Despite advanced technology and experience, complications during laparoscopy remain a major cause of significant cause of morbidity. [28] The incidence of postoperative complications with laparoscopy in our study was very low which corresponds with some studies in Southwest Nigeria, Sagamu [13,29] and Ibadan.[15] All the complications were of mild grade and did not require any active intervention. Abdominal pain was the commonest complication seen in this study which is consistent with reports in Northcentral Nigeria, Jos [10] and Sagamu in Southwest Nigeria. [29] The key to reducing postoperative complications during laparoscopy is adequate training.

Conclusion

Tubal and pelvic diseases are common factors responsible for infertility in both primary and secondary infertility in this study. Laparoscopy key diagnostic tool in the evaluation of cases of infertility when tubal and pelvic factors are implicated.

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May God Almighty reward you all abundantly.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

References

- Otubu JAM (2006) Infertility. In: Agboola A, Textbook of obstetrics and gynaecology for medical students, (2nd Edn.), Heinemann educational books Nig, pp. 128-138.
- Shahin G, Gayane A, Alan HA, Decherney AH, Nathan L, et al. (2013) Infertility, In: Current Diagnosis & Treatment Obstetrics & Gynecology. (11th Edn.), McGraw Hill Companies, pp. 879-888.
- Audu BM, Massa AA, Bukar M (2003) Clinical presentation of Infertility in Gombe, North-Eastern Nigeria. Trop J Obstet Gynaecol 20(2): 93-96.
- Idrisa A, Kwawukume EY, Emuveyan EE (2005) Comprehensive Gynaecology in the tropics. Graphic Packaging. Accra, pp. 333-345.
- Abiodun OM, Balogun OR, Fawole AA (2007) An aetiology, clinical features and treatment outcome of intrauterine adhesions in Ilorin, North-central Nigeria. WJ Med 26(4): 298-301.
- Honore GM, Holden AE (1999) Schenken RS Pathophysiology and management of proximal tubal blockage. Fertil Steril 71(5): 785-795.
- Umar UA, Ibrahim SA, Omole Ohonsi A, Yakasai IA (2011) Comparative evaluation of tubal patency: Hysterosalpingography versus laparoscopy. International Journal of Academic Research 3(4): 7074.
- Olooto WE, Amballi AA, Banjo TA (2012) A review of female infertility; important aetiological factors and management. J Microbiol Biotech Res 2(3): 379-385.
- Lawrence I, Timchila A (2012) Endometriosis In: Lawrence I, Timchila A. Obstetrics and Gynaecology. John Wiley and sons ltd, p. 67-78.
- Sagay AS, Udoeyop EU, Pam IC, Karshima JA, Daru PH, et al. (1998) Laparoscopic evaluation of 1000 consecutive infertile women in Jos, Nigeria. Trop J Obstet Gynaecol 15(1): 30-35.
- Obuna JA, Ndukwe EO, Ugboma HAA, Ejikeme BN (2012) Clinical presentation of infertility in an outpatient clinic of a resource poor setting, South-East Nigeria. International Journal of tropical disease and health 2(2): 123-131.
- Umeora OU, Mbazor JO, Okpere EE (2007) Tubal factor infertility in Benin City, Nigeria – sociodemographics of patients and aetiopathogenic factors. Trop doct 37(2): 92-94.
- Lamina MA (2014) A ten-year review of laparoscopy in the evaluation of infertility at a tertiary health center in Southwestern Nigeria. Int J Res Health Sci 2(3): 842-846.
- Maheshwari A, Hamilton M, Bhattacharya S (2008) Effect of female age on the diagnostic categories of infertility. Hum Reprod 23(3): 538-542.
- Orji EO (2008) Comparative study of the impact of past pregnancy outcome on future fertility. Singapore Med Journal 48: 102-104.
- Okonofua FE (2003) Infertility in sub-Saharan Africa. In: Okonofua F. and Odunsi K. (Eds.), Contemporary Obstetrics and Gynaecology for Developing countries. Women Health and Action Research Centre (WHARC) Benin City, pp. 128-156.
- Puscheck EE, Woodad TZ (2009) Infertility. In: Obstetrics and Gynaecology. Mc Graw Hill company, pp. 125-156.

18. Bhattacharya S (2007) Infertility. In: Edmond DK (Edt.), Dewhurst's Textbook of Obstetrics and Gynaecology for Postgraduates. Blackwell Science Oxford, pp. 440-446.
19. Otolorin EO, Ojengbede O, Falase EO (1987) Laparoscopic evaluation of tuboperitoneal factor in infertile Nigerian Women. *Int J Gynaecol Obstet* 25(1): 47-52.
20. Ikechebelu JI, Mbamara SU (2011) Should laparoscopy and dye test be a first line evaluation for infertile women in southeast Nigeria? *Niger J Med* 20(4): 462-465.
21. Bendifallah S, Brun JL, Fernandez H (2011) Myomectomy for infertile women: the role of surgery. *J Gynecol Obstet Biol Reprod* 40(8): 885-901.
22. Ishikawa H, Reierstad S, Demura M, Tadayuki Kasai, Masaki Inoue, et al. (2009) "High aromatase expression in uterine leiomyoma tissues of African-American women." *Journal of clinical Endocrinology & metabolism* 94(5): 1752-1756.
23. Siam S (2013) Gynecologic laparoscopy and reproductive failure: Review of 4103 infertile Egyptian women. *Middle East Fertil Soc J* 5(9): 11.
24. Grimbizis GF, Camus M (2001) Clinical Implication of uterine malformation and hysteroscopic treatment results. *Human reprod update* 7(2): 161-174.
25. Shetty SK, Shetty H, Rai S (2013) Laparoscopic evaluation of tubal factor in cases of infertility. *Int J Reprod Contracept Obstet Gynecol* 2(3): 410-413.
26. Miller HJ, Weinberg RK, Canino NL, Klein NA (1999) The pattern of infertility diagnosis in women of advanced reproductive age. *Am J Obstet Gynecol* 4(6): 181-952.
27. Maheshawri A, Mark H Bhattacharya S (2007) Effect of female age on the diagnostic categories of infertility. *Advance access*. 23(3): 212-233.
28. Tahrik A, Fehmi C (2004) Complications of gynaecological laparoscopy; a retrospective analysis of 3572 cases from a single institute. *J obstet Gynaecol* 24(7): 813-816.
29. Odusoga OL, Oloyede OAO, Adewunmi AA, Fakoya TA (2002) Experience with the laparoscope in the evaluation of infertile women in Sagamu. *Nigerian Journal of clinical practice* 5(2): 127-129.

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