

Current approaches for assessment and treatment of women with early miscarriage or ectopic pregnancy in Nigeria: A case for dedicated early pregnancy services

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Abstract

Context: It has been suggested that women with early miscarriage or ectopic pregnancy are best cared for in dedicated units which offer rapid and definitive ultrasonographic and biochemical assessment at the initial review of the patient.

Aims: To describe the current protocols for the assessment and treatment of women with early miscarriage or ectopic pregnancy as reported by Nigerian Gynecologists, and determine if dedicated early pregnancy services such as Early Pregnancy Assessment Units could be introduced to improve care.

Settings and Design: A cross-sectional survey of Nigerian Gynecologists attending the 46th Annual Scientific Conference of the Society of Gynaecology and Obstetrics of Nigeria.

Materials and Methods: This was a questionnaire-based study.

Statistical Analysis: Data analysis was by descriptive statistics using Statistical Package for the Social Sciences software, version 17.0 for Windows (IBM Corporation, Armonk, NY, USA).

Results: A total of 232 gynecologists working in 52 different secondary and tertiary health facilities participated in the survey. The mean age of the respondents was 42.6 ± 9.1 years (range 28-70 years). The proportion of gynecologists reporting that women with early miscarriage or ectopic pregnancy were first managed within the hospital general emergency room was 92%. The mean reported interval between arrival in hospital and first ultrasound scan was 4.9 ± 1.4 hours (range ½-8 hours). Transvaginal scan was stated as the routine initial imaging investigation by only 17.2% of respondents. Approximately 94.8% of respondents felt that dedicated early pregnancy services were feasible and should be introduced to improve the care of women with early miscarriage and ectopic pregnancy.

Conclusions: Reported protocols for managing early miscarriage or ectopic pregnancy in many health facilities in Nigeria appear to engender unnecessary delays and avoidable costs, and dedicated early pregnancy services could be both useful and feasible in addressing these shortcomings in the way women with such conditions are currently managed.

Key words: Early pregnancy assessment units, ectopic pregnancy, gynaecological ultrasonography, miscarriage, ultrasonography

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Introduction

Approximately 30% of women in early pregnancy will experience pain or bleeding which may be attributable to miscarriage, ectopic pregnancy or a pregnancy of an unknown location.^[1,2] Traditionally, women with early

pregnancy pain or bleeding are seen in hospital general emergency rooms where they are evaluated by different grades of doctors before a definite diagnosis is eventually made, usually following an ultrasound scan.^[3,4] This

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could take many hours. Subsequent treatment usually involves emergency room or ward admission and if uterine evacuation or other surgery is required, this could lead to admission for days. This practice is now adjudged in many Western societies to be a suboptimal care.^[5]

The concept of a dedicated, multiprofessional service for women with problems in early pregnancy was first proposed in 1991 after the outcomes of an early pregnancy assessment unit (EPAU) setup in Gloucester was published by Bigrigg and Read.^[6] EPAU is an acute gynecology service with direct referrals from the general practitioner, the general emergency room or the gynecological ward and in some places, self-referral or walk-in service are also obtainable.^[6] The objective of EPAUs is to provide prompt and empathic care for women with early pregnancy pain or bleeding. EPAUs are based on the deployment of transvaginal ultrasonography and urine/serum beta-human chorionic gonadotropin (β -hCG) as soon as the woman presents for care.^[3-5] The prompt diagnosis enabled by this protocol reduces time wasted in waiting for assessment in busy hospital emergency rooms and also in inviting more senior doctors to review and make diagnosis. And because such early diagnosis facilitates prompt care, it provides the capacity to manage the majority of women on an outpatient basis.^[6] EPAUs are now considered the gold standard of management for early miscarriage or ectopic pregnancy.^[4,5,7]

The service requirements for an EPAU include direct referral and telephone access, multi-professional team (doctors, nurses/midwives, sonographers, phlebotomist), dedicated area of the hospital, urine β -hCG testing, access to laboratory service for serum B-hCG, progesterone, and rhesus status, Anti-D administration, transvaginal and abdominal ultrasound, counseling, ready access to theater facilities on-site, and ability to admit direct to the gynecology ward.^[6-8]

Although the impact of EPAUs have not been evaluated by randomized controlled trials, observational studies showed that it could result in a shorter length of stay in both emergency departments and outpatient clinics, a reduction in the proportion of women requiring hospital admission and a reduction in the number of women representing to health services, greater patient satisfaction and reduced cost to patients.^[4-6,9]

A recent study in Nigeria found that vaginal bleeding was the commonest gynecological complaint in early pregnancy and that there was a poor correlation between clinical impressions and ultrasonographic findings.^[10] As a preliminary part of a study to determine feasibility of EPAUs in Nigeria, we surveyed a group of Nigerian Gynecologists attending the 46th Annual Scientific Conference of the Society of Gynaecologists and Obstetricians of Nigeria (SOGON) to determine the current practices for the care of women with early miscarriage or ectopic pregnancy in their centers

and also the readiness and capability to improve such care through dedicated early pregnancy services.

Materials and Methods

This was a cross-sectional study which took place during the 46th Annual SOGON conference held in Abakaliki, Ebonyi State between 20th-24th November 2012. SOGON is the umbrella professional organization of Gynecologists and Obstetricians in Nigeria. It is an affiliate member of the International Federation of Gynaecology and Obstetrics (FIGO) and the African Federation of Obstetrics and Gynaecology (AFOG). SOGON has membership strength of over 2000. The total number of participants at the conference was 453.

Sampling was purposive and involved consecutive consenting participants. Data collection was by self-administered questionnaire which was developed for the study. The questionnaire was in three parts: The first was the socio-demographic characteristics of respondents; the second evaluated the current approaches for the care of women with early miscarriage or ectopic pregnancy, while the third evaluated the attitude of gynecologists towards EPAUs, as well as the availability of facilities and skills for dedicated early pregnancy services. For the purpose of this study we adopted the definition of early pregnancy as the period covering the first trimester and early second trimester up to 16 weeks of gestational age as used in the study by Bignardi and colleagues.^[6] Data was coded into Statistical Package for the Social Sciences software (SPSS) version 17.0 for Windows (IBM Corporation, Armonk, NY, USA). Analysis of data was by descriptive statistics. Ethical clearance was obtained from the research ethics sub-committee of the Local Organising Committee of the conference.

Results

A total of 250 questionnaires were distributed out of which 232 were fully completed giving a response rate of 92.8%. Respondents were practising in 52 different hospitals offering secondary and tertiary levels of care in the six geopolitical zones of Nigeria. The health facilities where respondents worked were distributed among the six geopolitical zones of Nigeria as follows: South East 10, South South 10, South West 11, North West 6, North Central/Abuja 12 and North East 3. The mean age of the respondents was 42.6 ± 9.1 years (range 28-70 years). Table 1 shows the socio-demographic characteristics of the respondents.

Current approaches for the assessment and treatment of women with early miscarriage or ectopic pregnancy
All respondents indicated that no dedicated service existed for women with early miscarriage or ectopic pregnancy. Concerning the place of first contact of such women with the

Table 1: The socio-demographic characteristics of respondents

Characteristics of respondents	Number n=232	Percent
Age (years)		
21-30	8	3.4
31-40	88	37.9
41-50	96	41.4
51-60	32	13.8
61-70	8	3.4
Sex		
Male	180	77.6
Female	52	22.4
Rank		
Consultant	144	62.1
Senior registrar	88	37.9
Religion		
Christian	200	86.2
Muslim	32	13.8
Zone of practice		
South East	104	44.8
South West	12	5.2
South South	56	24.1
North East	12	5.2
North West	16	6.9
North Central	32	13.8
Years of experience		
10 or less	176	75.9
11-20	38	15.5
21-30	12	5.1
31-40	8	3.4

care team, approximately 92.0% (213/232) of respondents stated the general emergency room, 15.5% (36/232) stated general outpatient clinic, 3.4% (8/232) reported labour ward whereas 1.7% (4/232) reported gynecology clinic.

With respect to the level of medical personnel who first attended to women with early miscarriage or ectopic pregnancy, approximately 92.2% (214/232) of respondents stated that the Medical officer in the Emergency room or in the general outpatient clinic (who then invited the gynecological team on call or referred to the gynecology clinic respectively); 7.8% (18/232) stated senior registrar or consultant in the gynecology outpatient clinic.

For time taken from arrival in hospital to review by the gynecological team, 69% (160/232) of respondents stated less than 3 hours, 25.8% (60/232) reported 3-6 hours whereas 5.2% (12/232) stated more than six hours. The mean reported interval between arrival in hospital and review by the gynecological team was 4.4 ± 1.6 hours (range 1-8 hours). Concerning the level of the doctor in the gynecological team who first reviews the patient, 89% (207/232) stated that the gynecological senior house officer or registrar on-call was usually the first to see such patients.

The mean reported interval between the first review of patients with suspected miscarriage or ectopic pregnancy and the first ultrasound scan was 4.9 ± 1.4 hours (range ½-8 hours). The time taken from the first review of patients to the first ultrasound scan was reported as less than one hour by 18% (42/232), 1-2 hours by 14% (33/232), 3-6 hours by 60% (139/232) and more than 6 hours by 2% (5/232).

Only 17.2% (40/232) reported that transvaginal scan was routinely done for the diagnosis of early miscarriage or ectopic pregnancy. Ultrasound scan was reported to be done in the radiology department by 98.2% of respondents.

Routine admission of women with early pregnancy pain and/or bleeding into gynecology wards was reported by 88.6% (206/232) of respondents. The mean duration of admission for women with miscarriage was reported as 3.4 ± 1.95 days (range 1-10 days). Use of written algorithms of care for women with early pregnancy pain and/or bleeding was reported by only 8.9% (21/232) of respondents. Uterine evacuation (surgical or medical evacuation) for missed or incomplete miscarriage of pregnancies below 16 weeks as well as laparotomy for ruptured ectopic gestation was reported by all respondents. Expectant management for threatened miscarriage was also reported by all respondents. Only 15% (35/232) of respondents stated that incomplete or missed miscarriage was managed expectantly. Screening for infection, use of anti-D immunoglobulin for non-sensitized rhesus-negative women and histological examination of tissue passed at miscarriage were reported by 23% (53/232), 96% (223/232) and 62% (144/232), respectively.

Regional distribution of current approaches is summarized in Table 2. Across the zones, there was no report of any health facility that had a dedicated location where women with early miscarriage or ectopic pregnancy were seen. Participants reported that a non-specialist medical officer in the general emergency room (commonly referred to as Casualty Officer) was the first to see women with early miscarriage or ectopic pregnancy in 100% of cases in the North West and North East, but in only 66% in the South West. Average waiting time to see a gynecology team after initial review by casualty officer was reported by 50% of respondents from the North West as one hour compared to 100% of respondents from the South West. Routine transvaginal scan was reported to be done for women with early miscarriage or ectopic pregnancy by about 8% of respondents from the South East, but 33% in the South West. Routine admission for women with early miscarriage or ectopic pregnancy was reported by 25% of respondents from the North Central, but by 75% from the North West.

Table 3 shows the most important reported obstacles militating against care for women with early miscarriage

Table 2: The distribution of responses on current protocols based on geo-political zones

Variable	Geo-political zones of practice of respondent ^a (%)					
	SE n=104	SS n=56	SW n=12	NE n=12	NC n=32	NW n=16
Place where patients are first seen						
General emergency room	56 (61.5)	28 (50.0)	12 (100.0)	12 (100.0)	32 (100.0)	16 (100.0)
Gynecology clinic	4 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
General outpatient clinic	4 (3.8)	4 (7.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Combination of the above	32 (30.7)	24 (42.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Rank of doctor who attends to patient first						
Medical officer	92 (88.5)	48 (85.6)	8 (66.7)	12 (100.0)	28 (87.5)	16 (100.0)
Senior OB/GYN resident	12 (11.5)	4 (7.1)	4 (33.3)	0 (0.0)	4 (12.5)	0 (0.0)
Consultant OB/GYN	0 (0.0)	4 (7.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Average waiting time to see Gynecological team						
Less than 3 hours	76 (73.1)	32 (57.1)	12 (100.0)	8 (66.7)	24 (75.0)	8 (50.0)
3-6 hours	24 (23.0)	16 (28.6)	0 (0.0)	4 (33.3)	8 (25.0)	8 (50.0)
Greater than 6 hours	4 (3.8)	8 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Availability of transvaginal scan for early pregnancy pain/bleeding						
Yes	8 (7.7)	16 (28.6)	3 (33.7)	0 (0.0)	8 (25.0)	4 (25.0)
No	96 (92.3)	40 (71.4)	8 (66.3)	12 (100.0)	24 (75.0)	12 (75.0)
Routine admission						
Yes	100 (96.2)	48 (85.7)	8 (66.3)	8 (66.3)	26 (75.0)	16 (100.0)
No	4 (3.8)	8 (50.0)	4 (33.7)	4 (33.7)	6 (18.8)	0 (0.0)

^aSE=South East, SS=South South, SW=South West, NE=North East, NC=North Central, NW=North West, OB/GYN=Obstetrics and Gynecology

Table 3: Reported obstacles militating against the care of women with early miscarriage or ectopic pregnancy

Obstacles	Frequency	Percent
Lack of facility and skill for sonography in OB/Gyn Dept	224	96.6
Long wait at A and E	198	85.3
Inability of patients to pay for services	160	69.0
Delay in presentation by patient	128	55.2
Delay by anesthetists	80	34.5
Difficulty in assessing drugs	32	13.8
Lack of blood transfusion services	32	13.8
Lack of theater space	16	6.9

OB/GYN=Obstetrics and Gynecology

or ectopic pregnancy. Unavailability of facility or skills for transvaginal ultrasonography within gynecology departments was the commonest obstacle mentioned by respondents at 96.6% (224/232).

Feasibility of EPAU in terms of resources and attitude

Approximately 94.8% (220/232) had a favourable attitude towards the introduction of EPAUs because they felt that the introduction of EPAU could improve care for women with early miscarriage or ectopic pregnancy. Approximately 65% (152/232) stated that they were familiar with the concept of EPAU and over 46.6% (108/232) had moderate to good understanding of the principles of EPAU. Ultrasound scanner was reported to be available in Obstetrics and Gynecology departments by 57.6% (130/232) (but 98% of

these were located in labour wards). Only 24.1% (56/232) of those sampled had formal training in transvaginal sonography. Table 4 shows the regional distribution of reported facilities potentially available for dedicated early pregnancy services. Across the six geopolitical zones, health institutions with skills and facilities for transvaginal scans in the Obstetrics and Gynecology department ranged from 0-33%, whereas institutions with trained counselors on miscarriage ranged from 0-8.3%.

Discussion

This study was a descriptive analysis of self-reports by gynecologists practising in all the geopolitical zones of Nigeria regarding the current protocols for the assessment and treatment of women with early miscarriage or ectopic pregnancy. The study showed that there was a common pattern of management of women with early miscarriage or ectopic pregnancy which involved initial attention at the Accident and Emergency room or General Outpatient Clinic by a non-specialist medical officer. Contact with gynecological team was upon their invitation and could take hours and initial ultrasound scan (which was invariably trans-abdominal rather than transvaginal) could also take several hours and would require moving the patient to the radiology department. The findings in this survey are similar to the clinical culture in the emergency departments of Australian hospitals before the introduction of early pregnancy assessment protocol which were separately described by Bignardi and colleagues^[3] as well as by O'rouke and Wood.^[4]

Table 4: Regional distribution of reported existing facilities available for early pregnancy services in the hospitals from which respondents were drawn

Resource	Number of facilities with resource ^a (%)					
	South East n=10	South West n=12	South South n=10	North East n=3	North West n=4	North Central n=12
Availability of ultrasound machine located within Obs/Gyne Dept	7 (70.0)	9 (75.0)	4 (40.0)	1 (33.3)	2 (50.0)	4 (33.3)
Skills for transvaginal scanning within Obs/Gyne Dept	2 (20.0)	2 (16.7)	0 (0.0)	1 (33.3)	1 (25.0)	2 (16.7)
Desire for EPAU by gynecologists	10 (100.0)	10 (83.3)	10 (100.0)	3 (100.0)	3 (75.0)	10 (83.3)
Availability of space/Location for EPAU	2 (20.0)	3 (25.0)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)
Laboratory back-up for EPAU especially facilities for urine and serum β -hCG	10 (100.0)	12 (100.0)	10 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
Availability of trained counselors on miscarriage etc	0 (0.0)	1 (8.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (8.3)
Availability of nurses, sonographers and phlebotomists	10 (100.0)	11 (91.7)	10 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)
Functional two-way referral system (between center and peripheral hospitals) backed by telephone access	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (16.6)
Ready access to theater facilities	10 (100.0)	12 (100.0)		3 (100.0)	3 (100.0)	12 (100.0)
Ability to admit directly to gynecology ward	10 (100.0)	12 (100.0)	10 (100.0)	3 (100.0)	3 (100.0)	12 (100.0)

^an=number of hospitals from which respondents were drawn in each zone

The long mean reported interval from initial review of patients to first diagnostic ultrasound scan could be due to the following reasons. The practice of sending patients to the radiology department for every gynecological ultrasound scan, which was widely reported, could result in patients having to wait in long queues before being attended to. The possibility of being scanned initially by inexperienced resident doctors of radiology department during call hours could mean further delay to get the opinion of a more experienced or senior doctor. The findings in this study are similar to delays described in previous studies by Bignardi and co-workers.^[3] Fortunately, current evidence suggests that these delays are avoided by having dedicated early pregnancy services which provide a direct access to an experienced sonographer or gynecologist at first contact with the health facility.^[3,4,6,8,9]

Another finding in this study is the existence of a huge unmet need for ultrasound skills among gynecologists in Nigeria. This is buttressed by the finding that only 24% of respondents in this study had formal training in transvaginal scanning and that over 90% felt that the lack of the capacity for transvaginal scanning was the most important obstacle militating against timely care for women with early miscarriage or ectopic pregnancy. One way out of this problem may be for the West Africa and National Postgraduate programs in Obstetrics and Gynecology to develop competency based training programs in ultrasonography for Obstetrics and Gynecology (not just rotation through radiology departments). Delivery of such programs can be accomplished with the cooperation of the faculties of Radiology of both colleges and with radiology departments in different hospitals. Similar competency based training in Obstetrics and Gynecological ultrasonography has been introduced by the Royal College of Obstetricians and Gynaecologists (RCOG) in liaison

with the Society and College of Radiographers of the United Kingdom.^[11]

On its part, the finding of widespread reports of routine admission of women with early pregnancy pain and bleeding agrees with the practices described in previous studies in other western countries before the introduction of early pregnancy assessment units.^[1,3,6,8] The consequences of routine admission of women with early miscarriage or ectopic pregnancy could include unnecessary occupation of the hospital bed space by women who are awaiting definitive diagnosis or treatment, avoidable delay for the patient and possibly patient's dissatisfaction with the quality of healthcare services.^[6] Besides, unnecessary admission could potentially lead to increased cost of care.^[6]

With respect to the commonest perceived obstacles to the care of women with early pregnancy pain and bleeding, it is important that over 96% of respondents thought that lack of facilities and skills for ultrasound scan within gynecology departments was the most important single obstacle. This study showed that appropriate numbers of ultrasound machines could be lacking in most Ob/Gyn departments in Nigeria. This suggests that procurement of ultrasound machines for gynecology departments would be necessary if early pregnancy services were to be implemented in Nigeria. Fortunately, the use of cheaper, portable ultrasound machines with transvaginal probe has been shown in a previous study to be useful for use in dedicated early pregnancy services.^[4] These cheaper but efficient machines can be procured by hospitals with little or no financial strain.

Concerning the feasibility of introducing early pregnancy assessment units in Nigerian hospitals, the survey shows that the desire for EPAUs was overwhelming. However, facilities and skills for transvaginal ultrasound machines appear

grossly inadequate and trained miscarriage counselors and functional two-way referral systems seem to be virtually non-existent. Fortunately in each of the geopolitical zones, there were a few gynecologists with formal training in transvaginal scanning and these could become focal persons for hands-on training for gynecologists in their hospitals if given sufficient motivation by hospital or departmental policies. To reduce the cost of introducing the EPAU protocol, portable scanners with transvaginal probes and equipment for on-the-spot β -hCG assay can be sourced by hospitals to commence these services.

EPAUs are designed as multi-professional services with team working as a critical defining concept. Team working within the EPAU model involves the gynecologist and other health professionals such as midwives, sonographers, laboratory scientists and radiologists with special interest in gynecological ultrasonography. Fortunately, again, all these professionals are readily available in tertiary hospitals in Nigeria. Since a majority of respondents in this study were aware of the multiprofessional nature of EPAUs, it would appear that by supporting the introduction of EPAUs, gynecologists in Nigeria might not have difficulty working with other professionals in a team fashion.

The major strength of this study was the wide distribution of respondents across Nigeria which could enhance the external validity of the findings of this study. The major drawbacks included the fact that it dealt with self-reports by gynecologists. There was therefore the possibility of bias arising from wrong reportage. For instance, hospital based studies were more likely to estimate indices like the mean interval between patients' arrival in hospital and definitive treatment more accurately. Besides, the fact that most respondents were from Southern Nigeria where the conference was held could also skew the results to be more representative of what was obtainable in Southern Nigeria.

Conclusion

We conclude that reported current approaches for the management of women with early miscarriage or ectopic pregnancy in Nigeria could lead to delay in the diagnosis and treatment of patients, unnecessary admissions, avoidable costs and little or no regard for the psychological trauma suffered by women with early pregnancy complications. Given the overwhelming desire by Nigerian Gynecologists for the improvement of the quality of care for women with

early miscarriage or ectopic pregnancy through EPAUs and the apparent lack of ultrasound skills among them, we recommend competency-based training of gynecologists in Nigeria on gynecological ultrasonography. This would be a useful initial step towards the establishment and implementation of dedicated early pregnancy services in Nigeria.

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