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Challenges of Establishing an Upper Gastro-Intestinal Tract Endoscopy Unit in a Resource-Poor Setting

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Abstract: Upper gastrointestinal tract endoscopy is becoming increasingly available in Nigeria as a diagnostic tool for common gastrointestinal disorders. Oesophagogastroduodenoscope is becoming increasing available in both public and private health facilities in the country. However, there is a paucity of literature on the challenges being faced in the provision of such endoscopy services in the country. This study was therefore undertaken to highlight the challenges faced by three newly established endoscopy units in the country. To examine the challenges faced in the setting up of gastroscopy unit in Nigeria. A first hand assessment of the challenges encountered in the establishing of Oesophagogastroduodenoscopy unit in three health facilities in different regions of Nigeria was done. The assessment was done on two occasions: first at inauguration of the units then 6 months after. All the health facilities faced challenges of high cost of equipment acquisition and installation, non availability of consumables, lack of trained and skilled personnel, threat to sustainability of the procedure/units and lack of local skilled technician and engineers to maintain the equipments. The challenges faced by newly established Gastroscopy units in Nigeria are multifactorial. Some are general to healthcare service while others are peculiar to endoscopy services.

Key words: Challenges, upper gastro-intestinal tract, endoscopy, resource-poor

INTRODUCTION

Oesophagogastroduodenoscopy (OGD) is one of the most commonly performed endoscopic procedures. Properly performed, it provides valuable information in patients with upper Gastrointestinal (GI) conditions. Oesophagogastroduodenoscopy is a visual examination of the upper intestinal tract using a lighted, flexible fibreoptic or videoscope.

The upper gastrointestinal tract begins with the mouth and continues with the oesophagus, the J-shaped stomach and ends in the duodenum (Peter and Christopher, 1996; Jacques and William, 1999).

Equipment: The flexible endoscope is a remarkable piece of equipment that can be directed and moved around the many bends in the GI tract. Endoscopes come in 2 types. The original pure fibreoptic instrument has a flexible bundle of glass fibres that collect the lighted image at one end and transfer the image to the eye piece. The newer video endoscopes have a tiny, optically sensitive computer chip at the end. Electrical signals are then transmitted up the scope to the computer which then displays the image on a large video screen. An open channel in these scopes allow other instruments to be passed through in other to take tissue samples, remove polyps and perform other exams (Peter and Christopher, 1996; Jacques and William, 1999).

Indications for Oesophagogastroduodenoscopy: Due to factors related to diet, environment and heredity, the upper GI tract is the site of numerous disorders. The indications for oesophagogastroduodenoscopy include:

- Upper abdominal symptoms that persist despite an appropriate trial of therapy.
- Upper abdominal symptoms associated with other symptoms or signs suggesting serious organic disease (eg anorexia and weight loss) or in patients >45 years old.

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- Dysphagia or odynophagia.
- Oesophageal reflux symptoms that are persistent or recurrent despite appropriate therapy.
- Persistent vomiting of unknown cause.
- Suspected neoplastic conditions.
- Gastroduodenal or oesophageal ulcer.
- Upper tract stricture or obstruction.
- Gastrointestinal bleeding etc (American Socity for Gastrointestinal Endoscopy, 2000).

The procedure: Oesophagogastroduodenoscopy is usually performed on an out-patient basis. It is performed primarily for diagnostic and/or therapeutic reasons. The throat is often anaesthesized by a spray or liquid. Intravenous sedation is usually given to relax the patient, deaden the gag reflex and cause short term amnesia. For some individuals who can relax and whose gagging can be controlled, the exam is done without intravenous medication. The endoscope is then gently inserted into the upper oesophagus. Other instruments can be passed through the endoscope to perform additional procedures if necessary such as to obtain a biopsy specimen and removal of a polyp or tumour. The exam takes from 15-30 min.

Side effects and risks: A temporary, mild throat irritation sometimes occurs after the exam. Serious risks are very uncommon. One such is excessive bleeding, especially with removal of a large polyp. Others are perforation or tear. Quite uncommonly, a diagnostic error or oversight may occur (Peter and Christopher, 1996; Jacques and William, 1999).

Minimum requirements:

- Euipments
  - Gastroscopes.
  - Light sources.
  - Suction units.
  - Accessories eg leak testers, cleaning brushes. biopsy forceps etc.

- Endoscopy room (dedicated) with:
  - Functional air conditioning system.
  - Examination couch (1).
  - Trolleys (2).
  - Recovery area.
  - Wash hand basin (1).
  - Scope hanger (1).
  - Electricity stabiliser (1).
  - Drip stand (1).
  - Suction machine (1).
  - Basins (2).
  - Kidney dish (1).
  - Apron (1)/ Gown (1)/Boot (1)/Footwear (1).

- Staffing
  - Staff nurse(1).
  - Attendant(1).
  - Medical doctor (assisting).
  - Endoscopists.
  - Consumables/Drugs.
  - Xylocaine throat spray.
  - Cedex disinfectant (containing Glutaraldehyde).
  - Buscopan injection/Diazepam injection.
  - Needles and Syringes.
  - Surgical gloves (disposable).
  - Face mask.

MATERIALS AND METHODS

The study was a retrospective one. A review of the challenges faced by three health facilities in different regions of Nigeria which recently established upper gastrointestinal tract endoscopy unit was undertaken. The problems encountered by these hospitals were classified as, Equipments/accessories: These were problems associated with the acquisition of the equipments and other accessories; problems associated with installation in a dedicated endoscopy room, Power supply, Consumables/drugs, Manpower and Sustainability. Questionnaires were administered at the three health facilities for the rating of the challenges encountered by them in the delivery of endoscopy services. These challenges were rated on a scale of 0-4. Scale 0 implied 0%, scale 1 implied 25%, scale 2 implied 50%, scale 3 and 4 implied 75 and 100%, respectively

Setting of the study: The setting of the study was three health facilities in different regions of Nigeria which recently established upper gastro-intestinal tract endoscopy units:

- ECWA hospital (ECWA), Egbe (North-central, Nigeria). It is a mission hospital established in 1952. It has a bed capacity of 160. It operates both general medical and specialist services. Egbe is a junctional town located about 200 km from Lokoja, the Kogi state capital and about 130 km from Ilorin, the Kwara state capital. Patients attend the hospital mainly from neighbouring towns and villages from Kogi and Kwara states (Agaja, 1999).

Table 1: Status of hospitals

Hospitals	Ownership	Services	Year	Bed capacity
ECWA	Mission	G and S	1952	160
EHMC	Private	G and S	1989	20
FMCY	Government	G and S	1998	250

Key, ECWA= ECWA hospital, Egbe, EYITAYO= Eyitayo hospital and maternity centre, FMCY= Federal Medical Centre, Yola, G = General medical, S = Specialist

- Eyitayo Hospital and Maternity Centre (EHMC), Ilorin. It is a private hospital established in 1989 that runs a specialist Gastroenterology clinic. It has a bed capacity of 20. It receives referrals for Gastroenterology consultations and oesophagogastroduodenoscopy mainly from the University of Ilorin Teaching Hospital (UITH) Ilorin, other private hospitals and other government-owned primary and secondary health facilities in Ilorin and its environs. This is because this procedure ie OGD is not readily available elsewhere in Ilorin. Ilorin is located in the South-western zone of Nigeria. It serves patients from sub-urban and rural areas of Kwara state as well as neighbouring states of Ekiti, Kogi, Niger, Osun and Oyo. Ilorin also serves as the capital of Kwara state and it is multi-ethnic in composition (Olokoba, 2005).
- Federal Medical Centre (FMCY), Yola. It is a government-owned tertiary health facility that provides general medical and specialist services. It was established in 1998. It has only just moved to its permanent site in 2006. It has a bed capacity of 250. Patients attend the hospital from neighbouring towns and villages from Borno, Gombe, Taraba and Benue states and the republic of Cameroon. Yola is located in the North-eastern zone of Nigeria. Yola is the capital of Adamawa state and it is multi-ethnic in composition (Table 1).

RESULTS

During the study and while the endoscopy units of the concerned health facilities were being set-up, the authors visited the concerned centres and in fact actually set up those units. As a result, the authors had first hand knowledge of the situation of things.

A review of the challenges facing these health facilities were itemised as:

Manpower: This refers to availability of trained and skilled endoscopists and endoscopy nurses. It also refers to availability of skilled local technicians and engineers with the required knowledge on the maintenance and the servicing of the equipments. In terms of manpower, ECWA was rated as 1 which implies 25% availability. Both EHMC and FMCY were rated as 2 which implies 50% (Table 2).

Table 2: Rating of challenges

Challenges	Ecwa	Eyitayo	Fmcy
Manpower	1	2	2
Equipments/Accessories	2	2	3
Consumables/Drugs	2	3	3
Power supply	2	2	4
Sustainability	1	3	3
Utilization	1	3	3

Key rating, ECWA: ECWA hospital, Egbe Scale 0 = 0%, EYITAYO: Eyitayo hospital and maternity centre Scale 1 = 25%, FMCY: Federal Medical Centre, Yola Scale 2 = 50%, Scale 3 = 75%, Scale 4 = 100%

Equipments/accessories: This implies the availability of gastroscopes and accessories such as cleaning brushes and suctioning units etc. The commonly used brands of Gastroscopes were Olympus GIF P10 model with an Olympus CLE-10 light source in ECWA hospital, Egbe; an Olympus GIF XQ10 model with an Olympus CLK 3-4 light source at Eyitayo hospital and Maternity centre, Ilorin; and a Fujinon FG-100FP model with an accompanying light source in use at Federal Medical Centre, Yola. ECWA and EHMC were rated as 2, while FMCY was rated 3 (Table 2).

Consumables/drugs: This refers to the availability of xylocaine throat spray, cedex disinfectant (containing glutaraldehyde) etc. ECWA was rated 2, while EHMC and FMCY were rated 3 (Table 2).

Power supply: This refers to the availability of power supply from the public power source and the availability of back up power supply from generators. ECWA and EHMC were rated 2 while FMCY was rated 4 (Table 1).

Sustainability: Refers to the sustainability of these endoscopy services in the face of the problems of erratic power supply to these hospitals, high cost of endoscopy and poor patient acceptance among others. ECWA was rated 1 while EHMC and FMCY were rated 3 (Table 2).

Utilization: This refers to the utilization of these health facilities. Bed occupancy rate amongst other factors was used. ECWA was rated 2 while EHMC and FMCY were rated 3 (Table 2).

DISCUSSION

Upper gastro-intestinal tract endoscopy is becoming increasingly available in Nigeria as a diagnostic tool for common gastrointestinal disorders. Oesophagogastroduodenoscope is becoming increasingly available in both public and private health facilities in the country (Danbauchi *et al*., 1999; Malu *et al*., 1990; Olokoba *et al*., 2006).

However, the practice of gastroscopy is being threatened by challenges that are general to health service delivery in Nigeria and also those peculiar to it.

From this study, part of the problems encountered in the delivery of gastroscopy services in the health facilities studied was the high cost of acquisition of the gastroscopes and composite spares. Installation of the equipments at all three hospitals was problematic. There were no dedicated rooms for the equipments at any of the hospitals. ECWA and EHMC had to convert part of the already existing hospital theatres to make room for the equipments while FMCY had to convert an out-patient consulting room into a makeshift endoscopy unit. These have created the problem of frequent movement of these delicate equipments thereby putting them at risk of being damaged.

From this study, availability of manpower was low in all three centres: ECWA (25%), while EHMC and FMCY (50%). There is a dearth of trained and skilled endoscopists in Nigeria as a whole. Endoscopy nurses are also few. This has made the hospitals to employ the services of visiting Consultant gastroenterologists /endoscopists to run their specialised endoscopy services. It is common place to find visiting endoscopists performing gastroscopies in three or more hospitals and in this process travelling for great distances hundreds of kilometres apart. There is also a lack of skilled local technicians with the required know-how on the maintenance and the servicing of the equipments.

This study also rates the hospitals in terms of availability of consumables and drugs as ECWA (50%) while EHMC and FMCY as (75%). Consumables such as xylocaine throat spray and Cedex disinfectant (containing glutaraldehyde) are expensive and not readily available in the Nigerian market. Sometimes when these consumables are found, they are either expired or near the end of their shelf lives. Because of the nonavailability of these consumables, these centres have had to improvise with other disinfectants or methylated spirit for use to sterilize these equipments in place of glutaraldehyde. This may unfortunately reduce the lifespan of the scopes. Occasionally xylocaine gel is used in place of xylocaine throat spray.

This study also showed that power supply to these hospitals is poor: ECWA and EHMC (50%) while FMCY (100%). This percentage is a sum total for both power supply from the public power source and from generators. This has often hampered the delivery of endoscopic services at ECWA and EHMC. Sustainability of endoscopy services in the face of problems highlighted previously is poor in ECWA (25%) and good at EHMC and FMCY (75%). Utilization of endoscopy services in these hospitals is average ECWA (25%) while at EHMC and FMCY it is rated 75%.

Agaja (1999) in his study of the factors affecting the utilization of services at a rural mission hospital in Nigeria identified a depressed/bankrupt economy, bad access roads, socio-cultural factors, poor motivating factors to mention a few. Berkamon (1981) also showed that network, size, advice, influence, contact and distance are important factors which influence the effective utilization of health services. Other challenges that may be peculiar to the practice of gastroscopy in Nigeria are high cost of gastroscopes and non availability of spares, problems of installation of the gastrocopes, scarcity of consumables and dearth of trained and skilled personnel. Problems of sustainability of the procedure and lack of local skilled technicians and engineers required to service the equipments. And extensive review of the literature showed that there is no data on the subject locally and there are also no data with which to compare from outside Nigeria. This study is therefore a pioneer one and a landmark study.

CONCLUSION

The challenges faced by newly established Gastroscopy units in Nigeria are multifactorial. Some are general to health care services while others are peculiar to endoscopy services.

RECOMMENDATIONS

- Training of Staff nurses to become Endoscopy nurses so as to become conversant /proficient in the handling and cleaning of the Gastroscopes.
- Training of Medical doctors with interest in Endoscopy (Gastroscope) on how to handle the equipment, with a view of acquiring proficiency in making endoscopic diagnosis of simple and common gastrointestinal disorders.
- The appointment of more visiting consultant Gastroenterologists/Endoscopists conversant with Gastroscopes (especially the popular brands) wherever the hospitals do not have in-house specialists. This will be cost effective in the long run as it will achieve the following:

    - Ensure the continued use of the equipments.
    - Ensure the training of both the Medical doctors and Staff nurses.
    - Generation of revenue for the hospitals through the use of the equipments by patients.
    - Herald the emergence of the concerned health centres as one of the centres in the country where endoscopy services are rendered.
    - Position the hospitals at a level above other hospitals of similar status and age.

- Hospitals should liase with the equipment manufacturers with a view of servicing these gastroscopes (as and when due) and making spares more readily available in the market.
- Local training of local technicians and engineers in the maintenance of these equipments.
- Government should liase with stakeholders with a view of formulating policies on the provision of better and excellent endoscopy services in the country.

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