

Sedation practices for routine diagnostic upper gastrointestinal endoscopy in Nigeria

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Abstract

AIM: To determine the sedation practices and preferences of Nigerian endoscopists for routine diagnostic upper gastrointestinal endoscopy.

METHODS: A structured questionnaire containing questions related to sedation practices and safety procedures was administered to Nigerian gastrointestinal endoscopists at the 2011 annual conference of the Society for Gastroenterology and Hepatology in Nigeria which was held at Ibadan, June 23-35, 2011.

RESULTS: Of 35 endoscopists who responded, 17 (48.6%) used sedation for less than 25% of procedures, while 14 (40.0%) used sedation for more than 75% of upper gastrointestinal endoscopies. The majority of respondents (22/35 or 62.9%) had less than 5 years experience in gastrointestinal endoscopy. The sedative of choice was benzodiazepine alone in the majority of respondents (85.7%). Opioid use (alone or in combination with benzodiazepines) was reported by only 5 respondents (14.3%). None of the respondents had had any experience with propofol. Non-anaesthetologist-directed sedation was practiced by 91.4% of

endoscopists. Monitoring of oxygen saturation during sedation was practiced by only 57.1% of respondents. Over half of the respondents (18/35 or 51.4%) never used supplemental oxygen for diagnostic upper gastrointestinal endoscopy.

CONCLUSION: Sedation for routine diagnostic upper gastrointestinal endoscopy in Nigeria is characterized by lack of guidelines, and differs markedly from that in developed countries.

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Key words: Gastrointestinal endoscopy; Nigeria; Sedation

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INTRODUCTION

Routine diagnostic upper gastrointestinal (GI) endoscopy is the standard practice for diagnosing esophageal, gastric and duodenal diseases. It has very low complication and mortality rates^[1] and may be performed with or without sedation. The use of sedation improves the tolerance and acceptance of the examination^[2], but increases the cost of the procedure and is responsible for about 50% of complications associated with the procedure^[3].

Sedation practices differ from one country to another.

er and even vary within the same country. These differences may reflect many different factors, which include the personal differences and training of the endoscopist, the availability of anesthetic services, the need to train colleagues in endoscopic techniques, the cost and availability of monitoring equipment, differences in the availability and use of common drugs, and particularly, the expectations of the patient^[4]. In the United Kingdom and United States, sedation is widely used in endoscopies. In France, 80% of colonoscopies are performed under general anesthesia, while in Germany and Finland most examinations are conducted without any form of anesthesia^[4].

Unsedated upper GI endoscopy is effective in selected patients, but causes reduced operator satisfaction. A meta-analysis showed that sedation achieved better patient cooperation and satisfaction and a willingness to have it repeated^[5].

Successful endoscopic procedures can be achieved with patients in either moderate or deep sedation or general anesthesia; however, moderate sedation is generally considered adequate to control the pain and anxiety of routine endoscopic examinations and to achieve adequate amnesia^[6].

Sedation is a continuum of progressive impairment of consciousness ranging from minimal sedation to general anesthesia. Although clinicians may target a specific level of sedation, it is not always possible to predict how each patient will respond to sedative or analgesic medications. Patients can move in a fluid manner between these extremes^[7]. Targeting moderate sedation is the goal, but in clinical practice some patients will transiently be in lighter or deeper levels of sedation. Targeting conscious levels results in an overall safer profile than targeting deeper levels and should result in a substantial safety margin for non-anesthesiologists.

Since the 1980s, the use of benzodiazepines, often in combination with an analgesic has become standard practice in the United States and many parts of Europe^[8,9]. Time consuming and technically complex endoscopies of the GI tract such as endoscopic retrograde cholangio-pancreatography and endoscopic ultrasonography require deep sedation and propofol is a popular choice for induction and maintenance of deep sedation^[10]. Propofol has also been adjudged a very safe sedative for endoscopist-directed sedation^[11].

In Nigeria, there are currently no guidelines for sedation in GI endoscopy. This study was carried out to determine the sedation practices of Nigerian endoscopists for routine diagnostic upper GI endoscopy. Information obtained from this study would be useful not only in the audit of the practice of gastroenterology in a resource-poor setting such as Nigeria, but also in formulating guidelines and further research.

MATERIALS AND METHODS

In this study, a structured questionnaire was adminis-

tered to all GI endoscopists who attended the annual scientific conference and general meeting of the Society for Gastroenterology and Hepatology in Nigeria (SOGHIN) which was held in Ibadan, Oyo State, Nigeria between June 23 and 25, 2011.

The questionnaire included 12 multiple choice questions focusing on the practices of routine diagnostic upper GI endoscopy. Such practices included sedation preference and administration, sedative drugs used, monitoring during sedation, use of supplemental oxygen, use of antispasmodic drugs and use of patient consent form. The data were expressed as percentages. Where appropriate, the difference between proportions was determined using χ^2 . *P* value of < 0.05 was considered statistically significant.

RESULTS

Of 41 questionnaires handed out, 35 were completed and returned, giving a response rate of 85.4%. There were 31 males (88.6%) and 4 females (11.4%). The majority of endoscopists were physicians (82.9% or 29/35), while 14.3% (5/35) were surgeons. One respondent did not indicate whether he was a physician or a surgeon (2.8%).

Twenty two respondents (62.9%) had less than 5 years experience in GI endoscopy, while only 4 (11.4%) had up to 15 years experience (Table 1). Seventeen respondents (48.6%) performed less than 25% of routine diagnostic upper GI endoscopies with sedation, while 14 (40.0%) performed 75% or more of the procedures with sedation (Table 2). The difference between the proportions was not statistically significant ($\chi^2 = 0.2014$, *P* = 0.6536). With regard to the criteria for deciding who receives sedation (Table 3), 24 respondents (71.4%) used sedation for uncooperative patients, 14 (40%) for children, 9 (25.7%) for patients who requested it, and 12 (34.3%) for patients less than 60 years of age.

Regarding the question "Do you routinely ask for the preference of your patient for sedated or unsedated examination", 27 (77%) responded in the negative. Thirty endoscopists (85.7%) used benzodiazepine alone as the sedative drug. Only 5 respondents (14.3%) had used opioids alone or in combination with benzodiazepines. None of the respondents reported ever using propofol (Table 4).

Concerning the administration of the sedative; 20 endoscopists (57.1%) administered it themselves while 14 (40%) employed other non-anesthesiologist staff. Only 3 endoscopists (8.6%) answered that anesthesiologists administered the sedation (Table 5). Bolus administration was practiced by 26 endoscopists (74.3%), while only 9 (25.7%) administered it in titrated fashion. For sedated patients, 30 respondents (85.7%) monitored vital signs. However, 18 respondents (51.4%) monitored unsedated patients. Oxygen saturation and electrocardiogram (ECG) were monitored by only 20 respondents (57.1%) and 5 respondents (14.3%), respectively. Eighteen respondents (51.4%) never used supplemental oxygen

Table 1 Distribution of gastrointestinal endoscopists according to years of experience

Years of practice	No. of endoscopists (n = 35)	Percentage
< 5 yr	22	62.9
5 yr to 10 yr	3	8.5
> 10 yr to 15 yr	5	14.3
> 15 yr	4	11.4
Not stated	1	2.9
Total	35	100

Table 2 Frequency of using sedation in upper gastrointestinal endoscopy

Upper gastrointestinal endoscopies with sedation	No. of endoscopists (n = 35)	Percentage
< 25%	17	48.6
25%-49%	0	0
50%-74%	4	11.4
≥ 75%	14	40.0
Total	35	100

(Table 6).

With regard to use of antispasmodics, the responses were always, in most cases, occasionally and never by 9 (25.7%), 3 (14.3%), 17 (48.6%) and 4 (11.4%) respondents, respectively. Informed consent prior to endoscopic examination was routinely obtained by 29 respondents (82.9%), while 6 (17.1%) did not obtain informed consent.

DISCUSSION

The practice of endoscopic sedation varies from country to country due to social, cultural, economic and regulatory influences^[2-4,6]. Although the medical literature is replete with guidelines and recommendations for the practice of sedation in developed nations, principally the United States and Western Europe^[12-15], minimal data exist about sedation practices in resource-poor countries including Nigeria. In this study, the questionnaire was administered directly to the endoscopists rather than studying one or two individuals adjudged to be experts in the field and accepting their views as representative of whole nations^[16]. The problem with the latter approach is that responses to questions could reflect preconceived beliefs about practice patterns internationally rather than actual practice.

The response rate in this study was 85.4%. This is considered satisfactory for a study of this nature. There were only 35 respondents. This clearly reflects a doctor to population ratio of 3 per 10 000 in Nigeria, compared to US which stands at 26 per 10 000. The gap is even wider when one considers the gastroenterologist to population ratio. Nigeria has a population of over 150 million^[17] but has less than 60 gastroenterologists (registered with the national society, SOGHIN). Of these gastroenterologists, close to a third do not practice GI endoscopy because they work in centres where facilities

Table 3 Reasons for using sedation

Reason	No. of endoscopists (n = 35)	Percentage
Uncooperative patients	24	71.4
Children	14	40
Patients < 60 yr	12	34.3
Patient's request	9	25.7
Patients > 60 yr	5	14.3

Table 4 Frequency of use of different sedative drugs

Drug(s)	No. of endoscopists (n = 35)	Percentage
Benzodiazepine alone	30	85.7
Opioid alone	1	2.9
Benzodiazepine + opioid	4	11.4
Propofol	0	0
Total	35	100

for endoscopy do not exist. Therefore the 35 endoscopists who responded to the questionnaire are representative of the total number on the ground.

The majority of the GI endoscopists in Nigeria are physicians (82.8%). This is because in most training institutions it was the physicians that first introduced endoscopy into their practice in the early 1980s. In recent times, more surgeons have become interested and are making efforts to be trained.

In this study, the majority of respondents had less than five years practice experience in GI endoscopy. This again reflects the fact that endoscopy practice in Nigeria is still at a very early stage of development^[18]. Some of the pioneer endoscopists were lost to the brain drain in the 1980s and 1990s^[19,20], with the result that the training of future endoscopists suffered a tremendous setback. Most of the practicing gastroenterologists in Nigeria are products of the two postgraduate medical colleges (West African College of Physicians/Surgeons and the National Postgraduate Medical College of Nigeria).

With regard to use of sedation for routine upper GI endoscopy, 48.6% use sedation in less than 25% of procedures, while 40% use sedation in more than 75% of procedures ($P = 0.6536$). This means that among Nigerian digestive endoscopists, sedated and unsedated procedures are practiced. The use of sedation is said to be on the increase in some developed societies^[12]. However, the present study is unable to make any inference in that regard as this is the first study in Nigeria on this subject.

The majority of respondents (77%) did not give patients the privilege of choosing between sedated and unsedated procedures. This is not right as medical practice has moved sharply from the traditional paternalistic fashion to a model where patients actually participate in taking decisions regarding their care^[21]. With regard to the reasons for using sedation in some patients and not others, 71.4% answered that they sedate patients who are uncooperative. This suggests that such sedation

Table 5 Personnel responsible for administering sedation

Personnel	No. of endoscopists (<i>n</i> = 35)	Percentage
Endoscopist	20	57.1
Nurse	7	20.0
Doctor (resident doctors, medical officers, house officers)	7	20.0
Anesthesiologist	3	8.6

may only be administered after the procedure has commenced and the patient is judged to be uncooperative. The decision to sedate is supposed to precede the actual procedure and must be based on evidence.

Benzodiazepine alone is employed by most respondents (85.7%), while only 14.3% use opioids either alone or in combination with a benzodiazepine. Patients undergoing GI endoscopy may be anxious, as the procedure may be uncomfortable or painful. Effective sedation throughout the procedure is an important aspect of patient management and it should meet the anxiolytic and analgesic needs of the individual patient^[22]. The fact that most Nigerian endoscopists use benzodiazepine alone means that the concept of balanced sedation is not observed and many patients may actually be under-sedated. Granted that both the pharmacological effects and the side effects of benzodiazepines and opioids are synergistic and must be used with caution^[23], observations from Western Europe^[12,13] and the United States^[24] indicate that a benzodiazepine/opioid combination is the preferred method of endoscopic sedation worldwide. The 2 drug classes have a long history of safety, efficacy and widespread acceptance by non-anesthesiologists^[25]. They also have pharmacological antagonists which is an added advantage.

None of the respondents had any experience with propofol. The use of this sedative has been expanding in most developed countries of the world. It has a good safety profile^[11]. However, its use is highly regulated in America and Europe^[26,27]. The observed low rate of opioid use and non-use of propofol for routine diagnostic upper GI endoscopy in this study may be partly explained by the physician-dominated digestive endoscopy. Traditionally, surgeons work with anesthesiologists and anesthesiology is part of the standard training of surgeons. It is therefore likely that an endoscopy service that is dominated by surgeons may employ opioids and propofol more than that observed in this study.

Bolus rather than titrated injection is practiced by 74.3% of respondents. Although clinicians may target a specific level of sedation, it is not always possible to predict how each patient will respond to sedative or analgesic medications. Clinicians commencing sedation/analgesia intending to produce a given level of sedation should be able to rescue patients whose level of sedation has become deeper than initially intended. A key principle in the administration of sedation is to titrate medications in incremental doses to the desired sedative effect^[28]. Sedatives and analgesics must be titrated based upon the

Table 6 Frequency of use of supplemental oxygen

Type of patient	No. of endoscopists (<i>n</i> = 35)	Percentage
None	18	51.4
High risk patients	9	25.7
Oxygen desaturation	8	22.9
All	0	0
No response	1	2.9

condition of the patient, information from monitoring equipment and the needs of a procedure^[15].

The person who administers the sedation may be an anesthesiologist or a non-anesthesiologist. In this study, the sedation is administered by a non-anesthesiologist in 97% of respondents. It is common knowledge that the endoscopists, nurses and other doctors who administer these sedatives have not received any formal training for that purpose. There is uniform agreement in the literature and all relevant societal guidelines agree that specific training is needed for both the endoscopic procedure and any sedation associated with that procedure^[26,28-32]. Some even specify a certain number of supervised procedures required before competency can be assessed^[32]. The time has come for similar guidelines to be developed for resource-poor countries including Nigeria.

With regard to monitoring, 85.7% of respondents monitor sedated patients with vital sign measurements. Oxygen saturation and ECG are monitored by 57.1% and 14.3% of respondents, respectively. This is clearly unsatisfactory. Since sedation occurs along a continuum, all sedated patients should have their level of consciousness determined periodically during the examination and recovery periods using a standardized sedation scale. The risk of an unplanned cardiopulmonary event is directly related to the level of sedation. As the depth of sedation increases, so too does the likelihood that a patient will develop loss of the airway reflex, hypoventilation and/or apnea, or cardiovascular instability^[15]. Direct observation of a patient's ventilation and airway status by a trained individual may detect potential problems prior to any automated monitoring device. Monitoring of the patient's heart rate, arterial oxygen saturation, and blood pressure must be performed in patients receiving sedation. This recommendation is common to several societal guidelines^[15,26]. The American Society of Anesthesiologists guidelines recommend continuous monitoring of patients with significant cardiovascular disease or arrhythmia during moderate sedation. For Nigeria, a home-grown guideline will be able to address these issues taking cognizance of the personnel and resources available.

Over half of the respondents (51.4%) said they never used supplemental oxygen. Less than half of the respondents admitted using supplemental oxygen for specific indications. This is at variance with what occurs in many developed countries. Supplemental oxygen improves oxygenation and in the event of hypoventilation or apnea, extends the time that a patient remains adequately

oxygenated. It has become standard practice throughout many areas of the world to administer supplemental oxygen during endoscopy to all patients receiving moderate sedation^[15,30,33,34]. The low rate of administration of supplemental oxygen among Nigerian endoscopists may be related to the low rate of utilization of moderate/deep sedation as well as non availability of oxygen in the endoscopy suites.

The majority of respondents (82.9%) said they routinely obtained informed consent from patients prior to sedation. That is good clinical practice. However, 17.1% did not obtain consent. The concept of informed consent is a process that must take place between physician and patient, prior to the procedure or treatment, and should include discussion of pertinent risks, benefits and alternatives^[2,35,36]. Besides, properly informed patients seldom sue. Busy endoscopy units and long waiting lists for gastroscopy are not an excuse for omitting proper patient information^[37,38] and not asking their preference for sedation.

Over a quarter of the respondents used antispasmodic injection (hyoscine) in all diagnostic upper GI endoscopies. This is a very important finding because the role of antispasmodic agents in GI endoscopy remains controversial^[39]. There are fears about anticholinergics initiating glaucoma. There is also an unproven suspicion that the stomach is rendered atonic and more difficult to distend with air thereby making the procedure more difficult and heightening the risk of perforation. There have also been reports of adverse reactions to hyscine^[40-42]. Recommendations based on evidence are needed in this area of upper GI endoscopy.

In conclusion, the sedation practices of Nigerian GI endoscopists for routine upper GI endoscopy differ significantly from what is recommended by many national professional societies in the developed world. There is also considerable disparity between the sedation practices of different endoscopists. This state of affairs has been brought about by a complete absence of guidelines for sedation practices in Nigeria. There is therefore an urgent need for all the stakeholders, particularly gastroenterologists and anesthesiologists, to come up with guidelines appropriate to the existing human and material resources.

COMMENTS

Background

Endoscopy is standard procedure for the diagnosis and treatment of diseases of the gastrointestinal tract. Sedation improves patient tolerance and compliance for the procedure and also improves the quality of an endoscopic examination. The use of sedation is high in North America and Australia, but varies considerably in Europe, Asia and Africa. This study sought to determine the sedation preferences and practices of gastrointestinal endoscopists in Nigeria, a typical resource-limited African country.

Research frontiers

Nigeria is the most populous black country in the world with a population of over 160 million, but gastrointestinal endoscopy is still at a very rudimentary stage of development. The aim of this study was to determine the sedation practices of endoscopists for routine diagnostic upper gastrointestinal endoscopy

using a questionnaire which was administered to all Nigerian gastrointestinal endoscopists who attended their annual conference. In this way, the actual practitioners were reached rather than studying a few individuals and using their views, perceptions and preferences to make generalizations.

Innovations and breakthroughs

Both sedated and unsedated upper gastrointestinal endoscopy were common as 48.6% used sedation for less than 25% of procedures, while 40.0% used sedation in more than 75% of endoscopies. The most commonly used sedative is benzodiazepine (85.7%), while opioid use is limited to 14.3%. None of the endoscopists had any experience with propofol. Other findings were lack of guidelines, lack of proper monitoring of sedated patients and lack of non-anesthesiologist staff trained in the use of propofol.

Applications

The results from this study would provide the necessary framework for the eventual development of a guideline for sedation in gastrointestinal endoscopy in Nigeria. Similarly, the training and retraining needs of practicing endoscopists would be better addressed.

Terminology

Endoscopy means looking inside and gastrointestinal endoscopy means looking inside the gastrointestinal tract using an instrument called an endoscope. Because the procedure is uncomfortable and may actually be painful, the standard practice is to carry out the procedure with sedation. Sedation is the reduction of irritability or agitation by administration of a drug (sedative).

Peer review

This is an interesting survey of sedation practice for upper gastrointestinal endoscopy in Nigeria. Clearly sedation practice varies between countries and it is important to develop local guidelines and safety standards, and this survey would be an important first step in this direction. The paper is generally well written.

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