

Existence of Transvaginal Ultrasound Protocols in Irish Hospitals

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Abstract

Aim

This survey aimed to explore the existence of local protocols relating to transvaginal ultrasound (TVUS) practice, TVUS training and competency assessments among obstetrics and gynaecology (OBGYN) departments in Irish hospitals

Methods

A cross-sectional survey was designed, and an online questionnaire was sent to 61 managers of OBGYN departments in Irish hospitals. The questionnaire involved 18 closed-ended questions with text sections to allow participants to write additional comments. Descriptive, statistical and content analyses were used.

Results

Of 61 managers, 38 responded to the survey (a 62% response rate). One third of the respondents (32%) confirmed an absence of written protocols for TVUS practice. While the majority (64%) confirmed an absence of in-house training programmes for TVUS practice, the remainder confirmed their reliance on training methods delivered by university programmes. Moreover, 56% of the respondents stated that competency assessment methods for TVUS did not exist within their departments.

Conclusion

A lack of TVUS systematic training programmes was identified within Irish OBGYN departments as well as with assessment methods for ensuring competency in TVUS practice. The study therefore highlighted the importance of developing standardised protocols for clinical TVUS training. Furthermore, should protocols explicitly developed for TVUS practice be warranted within departments that regularly perform TV scans.

Introduction

Ultrasound scanning is the primary imaging modality in obstetrics and gynaecology (OBGYN) that has become fundamental to clinical practice and requires a certain level of proficiency with maximum skills acquisition¹. To provide best practice in ultrasound leading to high quality patient safety, healthcare practitioners are required to follow practice protocols that have been developed based on clinical guidelines^{2,3}. As optimum training is the major factor that could contribute to best practice in ultrasound^{4,3}, international ultrasound societies recommend between 100 and 500 supervised scans as essential requirements before being considered competent to perform independent ultrasound scans in OBGYN³⁻⁷. Furthermore, assessing a practitioner's competency for optimum practice in ultrasound has been further highlighted in recent years as an essential step used to meet professional standards for delivering best healthcare to patients^{8,9}. Currently there is discussions within Irish hospitals on how best to deliver maximum healthcare services to their patients in all clinical sectors. For example, the Irish Health Service Executive (HSE) 2020 vision and strategic plan highlighted the aim of achieving maximum patient care by assuring a competent workforce in healthcare¹⁰. This could include all hospital types that provide OBGYN services in the Irish healthcare system. As transvaginal ultrasound (TVUS) is a vital diagnostic tool within OBGYN services, ensuring competent practice by healthcare professionals is critical. Therefore, this survey aimed to explore the existence of local protocols relating to TVUS practice, TVUS ultrasound training and competency assessments among OBGYN departments of hospitals in the Republic of Ireland (ROI).

Methods

A cross-sectional survey was conducted in 2018 among the Irish hospitals which provide OBGYN services (n = 52) (i.e. 41 HSE hospitals of which 20 are university teaching hospitals, seven private hospitals and four private clinics). An email with a web-link to a self-administrated questionnaire, using SurveyMonkey, was sent to 61 managers of OBGYN departments (40 GYN departments involving two private clinics, 19 maternity units and two OB private clinics). The questionnaire consisted of 18 closed-ended questions with free text sections to allow respondents to provide additional information. The questions were devised to explore the departments' demographics, the existence of departmental protocols, availability of ultrasound training programmes, the presence of competency assessments, and views of respondents about the minimum supervised scans required for training.

Descriptive statistical analysis was used; and Pearson's Chi-Square and Fisher's exact tests were employed with results considered statistically significant if $p \leq 0.050$. These tests were employed to examine whether there was an association between the department type (GYN or OB) and the existence of each of TVUS protocols, training programmes, competency assessments and requirements to practice clinical TVUS. The textual comments of the respondents were analysed using simple content analysis¹¹. Ethical approval was granted for this study with reference number: LS-E-18-52-Almestehi-Moran (University College Dublin).

Results

Of 61 managers, 38 responded, resulting in a 62% response rate (Table 1). However, two respondents did not complete the last eight questions leading to 36 respondents that completed the survey (completion rate: 95%). These two responses were included within the descriptive analysis of the first ten questions, but excluded when the statistical tests were employed. No significant association was found between the department type (GYN or OB) and the existence of each of TVUS protocols, training programmes, competency assessments and requirements to practice clinical TVUS (Table 2).

Table 1. Demographics of the departments included in this study.

Characteristics	Number of departments n=38 (100%)
Department	
▪ GYN	24 (63%)
▪ OB ^a	14 (37%)
Hospital Classifications	
▪ HSE hospitals ^b	34 (89%)
▪ Private hospital	2 (5%)
▪ Private clinic	2 (5%)
Hospital Type	
▪ General and maternity hospital	20 (53%)
▪ General hospital	14 (37%)
▪ Maternity only hospital	4 (10%)
GYN ultrasound scans per month	
▪ No scans	5 (13%)
▪ < 100 scans	11 (29%)
▪ 100-200 scans	20 (53%)
▪ > 200 scans ^c	2 (5%)
OB ultrasound scans per month	
▪ No scans	23 (61%)
▪ < 500 scans	7* (18%)
▪ 500- 1000 scans	5 (13%)
▪ > 1000 scans ^d	3 (8%)
TV scans per month	
▪ No scans	2 (5%)
▪ < 50 scans	10 (26%)
▪ 50-100 scans	17 (45%)
▪ 101-200 scans	4 (11%)
▪ 201-300 scans	3 (8%)
▪ > 300 scans ^e	2 (5%)

Table 1. (Continued) Demographics of the departments included in this study.

Characteristics	Number of departments n=38 (100%)
TV scans per month for departments that demonstrated lack of TVUS protocols	n = 10 (100%)**
▪ < 50 scans	2 (26%)
▪ 50-100 scans	5 (45%)
▪ 101-200 scans	2 (11%)
▪ 201-300 scans	1 (8%)
Professions who perform TVUS scans in the departments	n = 380 (100%)
▪ Medical doctors	173 (45%)
▪ Radiographers	154 (41%)
▪ Midwives	53 (14%)

GYN: gynaecology; OB: obstetrics; HSE: Health Service Executive; TV: transvaginal; TVUS: transvaginal ultrasound; ^a Including 12 maternity units and two private clinic; ^b Including 20 departments of University Teaching hospitals; ^c Up to 350 scans; ^d Up to 3,500 scans; ^e Up to 500 scans; *Including one GYN department of 350 GYN scans and 70 OB scans performed per month; **Of 38 departments, 25 departments had TVUS protocols, two departments do not perform TV scans, ten departments had no TVUS protocols and one department-respondent missed the relevant question.

Table 2. Existence of protocols, training programmes, assessment methods and qualification requirements for TVUS practice in OBGYN departments of Irish hospitals

Question	Answer	GYN	OB	Total	P value
Do you have a written protocol specifically for TVUS?	Yes	18	7**	25 (68%)	0.15
	No	5	7	12 (32%)	
	Total	23	14	37 (100%)	
Do you have a specific training programme in your hospital for staff training in OBGYN/TVUS scanning?	Yes	7	6*	13 (36%)	0.50
	No	15	8*	23 (64%)	
	Total	22	14	36 (100%)	
Do you follow specific steps such as using a competency checklist tool, in relation to ensure that trainees are competent in TVUS?	Yes	7	9*	16 (44%)	0.056
	No	15	5*	20 (56%)	
	Total	22	15	36 (100%)	
Does your department require that practitioners have a specific qualification to practice TVUS?	Yes	14	12**	26 (72%)	0.25
	No	8	2	10 (28%)	
	Total	22	14	36 (100%)	

The table shows the association between the department characteristics (OB or GYN) and respondents' answers. GYN: gynaecology; OB: obstetrics; TVUS: transvaginal ultrasound; *Including one private clinic; **Including two private clinics.

Protocols

Thirty-five respondents (92%) confirmed that departmental ultrasound protocols existed and were developed based on various guidelines (Table 3). Twenty-five respondents (68%) confirmed that the department has specific written protocols for TVUS practice (Table 2). However, 32% of the departments confirmed the absence of TVUS protocols (Table 2); numbers of TVUS scans performed within these departments are displayed in Table 1.

Training

Twenty-three departments (64 %) have no specific training programme (Table 2). However, out of 13 respondents who confirmed the existence of a training programme, eight reported that the training occurs within a university graduate programme and three stated that the training is performed under supervision without indicating a specific programme. Two respondents did not comment.

Supervised scans

Nearly half of the respondents referred to 50 supervised scans or less as minimum requirements for TVUS ultrasound training (Table 4).

Competency

Sixteen respondents (44%) confirmed that they follow specific steps in assessing trainees' skills (Table 2). Based on the content analysis, eight managers (22%) evaluate the skills of their trainees through certificate programme assessments, four (11%) through a competency checklist and another four (11%) through ensuring that the trainees follow the departmental protocols.

Qualifications

Twenty-six respondents (72%) confirmed that their departments require qualifications for TVUS (Table 2). Based on the content analysis, 21 respondents reported that a university certificate in ultrasound (Masters, MSc, Higher Diploma or Graduate certificate) is essential for TVUS practice.

Table 3. Frequency of Guidelines selected by the 38 respondents.

Guideline	Frequency of selection	Percentage of the total responding departments (n = 38)
BMUS	20	52.6 %
IIRRT	11	28.9 %
RCR	7	18.4 %
ISUOG	6	15.8 %
AIUM	4	10.5 %
ASUM	1	2.6 %
EFSUMB	1	2.6%
No guidelines	7 (4 follow local protocols & 3 do not have protocols)*	18.4 %

**Based on the respondents' comments*

BMUS: The British Medical Ultrasound Society; IIRRT: The Irish Institute of Radiography and Radiation Therapy; RCR: The Royal College of Radiologists; ISUOG: The International Society of Ultrasound in Obstetrics and Gynecology; AIUM: American Institute of Ultrasound in Medicine; ASUM: Australasian Society for Ultrasound in Medicine; EFSUMB: European Federation of Societies for Ultrasound in Medicine and Biology.

Table 4. Views of the respondents on the number of TV-OB ultrasound scans required under supervision.

Supervised scans (GYN)	GYN	OB
	n (%)	n (%)
Not applicable	1 (2.8%)	16 (44.4%)
At least 10 supervised scans	4 (11.1%)	2 (5.6%)
At least 25 supervised scans	3 (8.3%)	1 (2.8%)
At least 50 supervised scans	12 (33.3%)	6 (16.7%)
At least 100 supervised scans	10 (27.8%)	9 (25%)
At least 200 supervised scans	3 (8.3%)	1 (2.8%)
At least 500 supervised scans	0 (0%)	1 (2.8%)
Depends on individual*	3	0 (0%)
Total	36 (100%)	36 (100%)

**Based on the respondents' comments*

Discussion

Responses were obtained from OBGYN departmental managers in Irish hospitals and the majority of respondents were from HSE hospitals and University Teaching hospitals. The response rate was 62%, which gave an acceptable validity to the survey results. However, as two respondents skipped the last eight questions of the survey, the response rate to these questions reduced to 59%. Both rates are comparable, and slightly higher than the average response rates (57.5%) in general healthcare professional surveys¹². The number of departments approached in this survey is greater than the number of units contacted in previous, relatively, similar surveys as they included 19¹³ and 21¹⁴ maternity units in Ireland. To the researcher's knowledge, the current study is the first survey which provides information about current trends for clinical training and practice in OBGYN-TV ultrasound in ROI hospitals.

The existence of scanning protocols for ultrasound practice in OBGYN was confirmed within 92% of the departments. These were developed based on different guidelines (Table 3). This result is promising as the value of employing a practice protocol relies on meeting consistency between international guidelines and organisational agreement to deliver appropriate healthcare services^{15,16}. However, regarding the existence of protocols that are specifically written for TVUS practice, nearly one third continued of the responses (32%) confirmed that such protocols are not available in their departments although TV scans are regularly performed in these departments (Table 1). Interestingly, the literature highlighted that when an ultrasound scan is driven by a specific protocol, the scanning time decreases, promoting efficient practice and thus improving patient-care quality¹⁷. However, maintaining practice efficiency with optimum care quality is becoming more challenging with the continued increase of clinical workloads in diagnostic imaging¹⁸. Clinical workloads have increased even after reducing out-patient service during the current outbreak of COVID-19 – a recent survey has reported that 46% of radiography departments in Ireland have experienced an increased time per examination due to infection control needs¹⁹. This issue could be further complicated when the examination is invasive such as TVUS scanning, and an absence of practice protocols could potentially reduce service quality. The HSE operational plan of 2018 emphasised the necessity to provide high quality service and recommended, in times of high service demands, the employment of available resources with maximum efficiency²⁰. Therefore, maximising the efficiency of TVUS practice could be attained by following protocols that are written specifically for TVUS. Availability of TVUS protocols could ensure the delivery of high-quality standards to patients especially within busy departments.

The majority of respondents (64%), including 15 GYN departments, seven maternity units and one private OB clinic, confirmed that no training programme is available for OBGYN or TV ultrasound. Even of those who confirmed the availability of such a programme (36%), their comments showed that no systematic programme was available within the departments but that training was relying on either university programmes or direct supervision. It cannot be argued that practitioners within these departments were not receiving adequate training on performing ultrasound scans; however, the results could show a shortage of clear strategies in which practitioners could be trained.

According to the Education Committee of the International Society of Ultrasound in Obstetrics and Gynaecology (ISUOG), systematic training in ultrasound can endorse an efficient learning process, and therefore can reflect positively on the competency of the practitioner and the accuracy of ultrasound scanning³. Furthermore, the Irish HSE report of the acute hospital operational plan has stated that one of the priorities of HSE hospital groups is to run systematic in-house training for clinical staff which could contribute to meeting the aim of developing the national workforce that delivers optimal point of care²¹. Achieving this aim may require time; however, drawing the attention of the stakeholders to the current findings could facilitate the inclusion of ultrasound training within future plans. Significantly, it has been shown that receiving insufficient ultrasound training could negatively affect the outcome of the service as ultrasound scans are highly operator dependent and require adequate time for training²².

In this survey, nearly half of the respondents suggested that 50 supervised scans or even less would be the minimum training for GYN and OB ultrasound. This number of supervised scans is lower than the minimum requirements recommended for OBGYN ultrasound training by international guidelines. Various guidelines in ultrasound practice provide recommendations in the amount of training required by a healthcare practitioner before starting independent ultrasound practice. For example, the ISUOG recommends supervised training involving at least 100 obstetric scans and 100 gynaecological scans³. The Royal College of Radiologists (RCR) recommends that the trainee must perform at least 30 sessions of ultrasound in obstetrics and gynaecology within six months, each session involving three to eight supervised scans as a minimum⁵. The European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB) recommends a minimum of 300 scans in gynaecology and a minimum of 500 scans in obstetrics and all under supervision⁴. The American Institute of Ultrasound In Medicine (AIUM) recommends that at least 300 scans must be completed under supervision for each of obstetrics and gynaecology^{6,7}. As a considerable number of responses in this survey have not met the minimum training requirements, standardising a local protocol for training is a crucial priority, and HSE has highlighted the importance of starting to develop national protocols using the framework for developing policies, procedures, protocols and guidelines²³.

The survey results provide insights into some elements that could be considered for a standardised Irish training protocol in OBGYN and TVUS ultrasound. The results show that the highest number of healthcare practitioners who perform TVUS among the 38 departments were medical doctors (45%), followed by radiographers (41%) and midwives (14%). Based on the respondents' comments, radiographers and midwives are usually required to complete a degree or certificate qualification in ultrasound (Masters, Higher Diploma, Graduate Certificate), in addition to clinical training to perform OBGYN and TV ultrasound scanning. However, doctors are not required to hold the same qualification, i.e. a postgraduate certificate in ultrasound. It is common practice that competency in ultrasound is assessed within certification programmes, leaving those who are not taking the programmes to train without assessments¹.

Although the international guidelines provide the required amount for minimum training to reach a competent level in ultrasound practice, recent literature has highlighted the importance of employing valid and reliable competency assessments, especially for those who rely only on clinical training^{8,9,24}. Developing skills in ultrasound practice could vary from one trainee to another, depending on the trainee's learning aptitudes and on the cases that the trainee scans²⁵. Therefore, assessing ultrasound skills using a competency checklist tool could facilitate improvements in the quality of training, enhancing trainee performance and ensuring patient safety⁹. In this survey, less than half of the departments (44%) assess the competency of trainees in performing TV scanning, the majority relying on assessments within a graduate programme and only four departments employing a checklist for assessment. These results could drive Irish protocols to include assessment methods that contribute to ensuring a competent level of ultrasound practice among medical trainees.

In conclusion, the findings highlighted the importance of developing standardised protocols for TVUS training. A lack of training programmes was identified among the departments as well as of assessment methods for ensuring competency in ultrasound practice. The existence of practice protocols that are developed based on international guidelines was recognised; however, the presence of protocols designed specifically for both transvaginal ultrasound practice and training should be warranted.

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Declaration of Conflicts of Interest:

The authors declare that they have no conflicts of interest.

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