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Early years postgraduate surgical training programmes in the UK are failing to meet national quality standards: An analysis from the ASiT/BOTA Lost Tribe prospective cohort study of 2,569 surgical trainees

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Abstract

Introduction

This study aimed to assess training of Senior House Officer-grade equivalent doctors in postgraduate surgical training or service (SHO-DIPST) in surgical specialties across the United Kingdom (UK), against nationally agreed Joint Committee on Surgical Training Quality Indicators (JCST QIs). Specific recommendations are made, with a view to improving quality of training, workforce retention and recruitment to Higher Surgical Training.

Method

Prospective, observational, multicentre study conducted by the Association of Surgeons in Training, using the UK National Research Collaborative model. Any centres in the UK providing acute surgical services were eligible. SHO-DIPST with a permanent contract, on out-of-hours 'on-call rota' were included across four, one-week data capture periods (September to October 2016, February to March 2017). Adherence to five quality indicators was reported using descriptive statistics. P-values were calculated using Student's t-test for continuous data, with a 5% level of significance.

Results

2569 SHO-DIPST were included from all ten surgical specialties in 141 NHS trusts across all 16 Local Education and Training Boards in the UK. 960 SHO-DIPST were in registered 'training' posts (37.3%). The median number of SHO-DIPST per rota was 7.0 (IQR 5.0 – 9.0). Adherence to the five included JCST QIs ranged from 6.0 – 53.1%. Only four SHO-DIPST posts across the study population met all five JCST QIs (0.3%). The total number of training sessions was higher for those in registered training posts ($p<0.001$), with significant specialty and regional variation

Conclusions

Only four early years postgraduate surgical training posts in the UK meet nationally approved minimum quality standards. Specific recommendations are made to improve training in this cohort and to bolster recruitment and retention into Higher Surgical Training.

Introduction

Since 2008, the UK surgical training pathway has followed a structure modified from 'modernising medical careers' (1). This follows a two-year postgraduate 'Foundation' (PGY1-2) programme, a two-year 'Core Surgical Training' (PGY3-4) programme, followed by a five-, or six-year 'Specialist Training' (PG5-10) programme. Within neurosurgery, cardiothoracic surgery, oral and maxillofacial surgery (and trauma and orthopaedics in Scotland) 'Specialist Training' begins at an earlier (PGY3) phase (2). In order to meet service requirements for the UK National Health Service, the surgical workforce practicing in the phase between Foundation and Specialist Training contains a broad mix of structured training and non-training, service provision posts. Whilst specific efforts have been made to improve training for this group (3, 4), there are concerns that these Senior House Officer-grade equivalent doctors in postgraduate surgical training or service (SHO-DIPST) may still represent a 'Lost Tribe' within the training pathway (5, 6). Reduced working hours (7, 8), increased service demands and workforce gaps (9, 10) risk negatively impacting the balance of service and training. Reflecting this, feedback from General Medical Council surveys across all medical specialties shows the lowest job satisfaction rating in early years surgical posts (11).

In the UK surgical education is managed regionally by Local Education and Training Boards (LETB). The Joint Committee on Surgical Training (JCST) is responsible for curriculum development and quality assurance of all the surgical training programmes in the ten defined surgical specialities via Specialty Advisory Committees (SACs): cardiothoracic surgery, general surgery, neurosurgery, oral and maxillofacial surgery, otolaryngology, paediatric surgery, plastic surgery, trauma and orthopaedics, urology and vascular surgery (12). The end of training is marked by the award of a 'certificate of completion of training' (CCT), which requires completion of the intercollegiate fellowship examinations, completion of surgical training competency based assessments, demonstration of management and leadership skills and logbook evidence as outlined by the JCST (2).

The JCST has developed a series of Quality Indicators (QIs) for Core Surgical Training to enable the quality of training placements within each surgical specialty and at core level to be assessed to a minimum standard (3). These relate to all aspects of training activity from sessional activity, to the structure of training and supervision, access to facilities and funding, and completion of workplace based assessments. Five JCST QIs relate specifically to daily sessional activity of SHO-DIPST: formal teaching (QI2), time for audit and research (QI4), consultant supervised clinics or theatre sessions (QI10), exposure to emergency conditions (QI12) and multidisciplinary team meetings (QI14) (see Table 2).

This study aimed to ascertain whether surgical Senior House Officer-grade equivalent training posts met Quality Indicators set by the Joint Committee on Surgical Training Quality Indicators (JCST QIs).

Methods

Association of Surgeons in Training (ASiT)

Founded in 1976, ASiT is a professional body and educational charity (Registered Charity number 274841) working to promote excellence in surgical training across all ten surgical specialties in the UK and Ireland[1]. ASiT is independent of the Surgical Royal Colleges, National Health Service and training regulators (General Medical Council, Joint Committee on Surgical Training), and is run for trainees, by trainees.

Participants and setting

This prospective, observational, multicentre cohort study was conducted in line with a pre-specified protocol (www.asit.org), using the UK National Research Collaborative model (13). This invited frontline postgraduate doctors in surgical specialties (ASiT/BOTA Lost Tribe Study Group) to collect real-time data about day-to-day activity in their hospital and specialty. An NHS Health Research Authority Decision tool was completed, which confirmed that this study was not classified as research. No ethical issues were identified.

Any unit in the UK employing SHO-equivalent grade doctors in a JCST-registered surgical specialty was eligible to register. No minimum number of SHO grade doctors, or centre-specific characteristics were used for exclusion. The ASiT (representing all surgical specialties) and BOTA committees (Orthopaedic Surgery) facilitated penetrance into all Local Education and Training Boards within the UK and Ireland. Investigators were required to include all SHO-DIPST working on permanent contracts in one of the ten JCST recognised surgical specialties at their hospital. SHO-DIPST were excluded if they did not work on an out-of-hours 'on-call rota', or held a temporary locum contract. Prospective data was collected over four, one-week long study periods: 1. 26th September to 2nd October 2016; 2. 24th to 30th October 2016; 3. 22nd to 28th May 2017; 4. 26th June to 2nd July 2017. Data capture was undertaken using a self-reported, online survey tool (SurveyMonkey™, CA, USA). There were two main components of the online survey tool:

1. A 12-point rota-specific survey collecting specific data on the NHS Health Board, Local Education and Training Board, surgical specialty, and the number and type of SHO-DIPST on the specialty rota. One rota-specific survey was completed per specialty, per included hospital.
2. A 12-point SHO-DIPST specific survey, collecting data daily on sessional activity (morning, afternoon, evening, night) of each SHO-DIPST on their specialty rota. The recorded activity was that in which the SHO-DIPST had spent a majority (>50%) of any given session.

JCST QIs related to sessional activity of SHO-DIPST were included in analyses (3). Adherence to quality indicators was defined the as proportion of total eligible trainees meeting the required minimum standard for each QI, expressed as a percentage. QI adherence related to within-hours practice was assessed using SHO-DIPST who were at work for a full, elective 'normal working week' (at least morning, and afternoon sessions from Monday to Friday). QI adherence related to emergency practice was assessed for SHO-DIPST present for at least one morning, or afternoon session over the study period. 'Training sessions' were defined as any sessional activity contributing to a JCST QI. 'Training posts' were defined as posts registered and monitored by the JCST for surgical training including: core surgical training, dental core training, or locum appointments for training. P-values for continuous data were generated using two-tailed Student's t-test with a 5% level of significance. Data analysis was undertaken using RStudio statistics package (V3.1.1, Boston, MA).

Results

Demographics

Complete data were provided from 2569 SHO-DIPST specific surveys, across 256 rota-specific surveys. Data were nationally representative, collected from 141 NHS trusts across all 16 LETB/training deaneries in the UK. This represents 59.2% of hospitals providing acute care services in the UK. The most SHO-DIPST records were collected from Health Education North West (n=315, 12.3%), Health Education South West (n=266, 10.4%) and Health Education Yorkshire and the Humber (n=218, 8.4%).

Table 1 demonstrates the number of SHO-DIPST records collected from the ten JCST-registered surgical specialties, and the proportion of those in registered training posts captured by this study. 960 of SHO-DIPST were in registered training posts (37.3%), 1609 were not (62.7%). The median number of SHO-DIPST per rota was 7.0 (IQR: 5.0 – 9.0). 14.6% of Rotas contained NIHR Integrated Clinical Academic trainees (377/2569) and 13.6% contained Less than Full Time Trainees (349/2569). There was a good representation of training doctors in all specialties (overall 90.2%, range: 30.7 – 100.0%).

Adherence to JCST Quality Indicators

Of 2569 total SHO-DIPST records, 1381 were at work for a full, elective 'normal working week', of which 541 (39.2%) were in training posts. Analyses of adherence to the JCST QIs related to elective activities included this group. Analyses related to emergency activities included 2266 SHO-DIPST who were present for at least one sessional activity in, or out of hours during the study periods, of which 851 (37.6%) were in training posts. Only four posts (0.3%) met all four included QIs; all of these were Core Surgical Training posts, all in General Surgery, with two from NHS Education for Scotland and two from Health Education Kent, Surrey and Sussex.

QI 2: *Trainees in surgery should have at least two hours of facilitated formal teaching each week (on average). (For example, locally provided teaching, regional meetings, annual specialty meetings, journal clubs and x-ray meetings)*: ***Adherence: 13.2 %***

The mean number of weekday teaching sessions was 0.18 (i.e. one half day session every five working weeks). 143 (5.6%) SHO-DIPST had a single session (>2 hours) of regional or departmental teaching during the study period, and 57 (2.2%) had two sessions of teaching or more. 86.8% (1199/1381) had no teaching during the study period.

QI 4: *Trainees in surgery should have easy access to educational facilities, including library and IT resources, for personal study, audit and research and their timetables should include an equivalent to half a day per week to allow for this*: ***Adherence: 13.3%***

The mean number of weekday research or audit sessions was 0.25 (i.e. one half day session every four working weeks). 86.7% (1197/1381) had no research or audit session during the week, whilst 106 (7.7%) had a single session and 78 (5.6%) SHO-DIPST had two or more sessions.

QI 10: *All trainees in Core Surgery should have the opportunity to attend five consultant supervised sessions of four hours each week.* ***Adherence: 19.5%***

The mean number of consultant supervised elective theatre sessions was 1.4 (range=0.0 – 10.0), and a mean of 0.6 clinic sessions (range=0.0 – 10.0). This equated to a mean of two consultant supervised sessions, or one working day of consultant supervised sessions per week. 735 of 1381 (53.2%) had no exposure to elective theatre or clinic over the study period. 1112 of 1381 SHO-DIPST (80.5%) had less than five consultant supervised sessions per week, with only a fifth attending five or more (n=269, 19.5%). There was significant variability in adherence to the generic QI between specialties, as shown in Table 2. Overall adherence to specialty specific quality indicators was poor, with a mean of 10.6%. Again, there was wide variability between specialties ranging from 3.7% for Oral and Maxillofacial Surgery (lowest), to 42.8% for Urology (highest).

QI 12 *- All trainees in Core Surgery should have the opportunity to be involved with the management of patients presenting as an emergency at least once each week (on average), under supervision and appropriate to their level of training.* ***Adherence: 53.1%***

The mean number of sessional activities on-call was 3.0 (median=2.0, IQR=0.0-4.0) corresponding to a day or night a week of on-call emergency service delivery across the study population (a '1 in 7' rota). Half of SHO-DIPST (53.1%) had at least one on-call session during the study period (1204/2266). The mean number of emergency theatre sessions attended was 0.5 (range=0.0 – 28.0), or one full day per month.

QI 14 *- All trainees in Core Surgery should have the opportunity to attend one MDT meeting, or equivalent, per week where appropriate.* ***Adherence: 6.0%***

The mean number of MDT sessions attended was 0.07 (approximately four per year). 93.0% of SHO-DIPST did not attend an MDT during the study period (1298/1381).

Total 'training sessions'

The mean number of total training sessions during a study week was 2.5 (range=0.0 – 28.0). This corresponds to less than one and a half days per working week of dedicated training time. SHO-DIPST in registered 'Training Posts' had more training sessions in total than those in 'Non-Training Posts' (3.8 versus 1.8, p<0.001), as did those in NIHR Integrated Clinical Academic Training posts (4.4 versus 2.4, p<0.001). Significant variation was found in mean total training sessions between deaneries and specialties. Specialties with greater than the mean total training sessions included Oral and Maxillofacial Surgery (mean=4.72, p=0.001), Ear, Nose and Throat (mean=3.0, p=0.04), and Plastic and Reconstructive Surgery (mean=3.1, p=0.05), whilst SHO-DIPST working in Neurosurgery (mean=1.9, p=0.02) and Orthopaedic Surgery (mean=2.3, p=0.05) had significantly less. SHO-DIPST working in Northern Ireland Medical and Dental Training Agency (mean=5.3, p<0.001), Health Education Kent Surrey Sussex (mean=3.5, p=0.002), and Health Education North

East (mean=3.4, p=0.006) had a significantly higher than the mean number of total training sessions, whilst SHO-DIPST working in Health Education North West (mean=2.0, p=0.002), Health Education West Midlands (mean=2.0, p=0.02), and Health Education Yorkshire and the Humber (mean=1.9, p=0.001) had significantly lower.

Discussion

The JCST requires that poor quality training placements must be highlighted in order that appropriate action may be taken (3). In this study, only four posts in the UK met minimum required quality standards for postgraduate surgical training. Only one fifth of posts facilitated five or more consultant supervised clinic or theatre sessions and over half included no exposure to elective or emergency operative surgery during the study window. SHO-DIPST attended an average of just one day of emergency theatre per month. Only one in twenty SHO-DIPST attended a multidisciplinary meeting and 90% had no formal teaching during a study week. This study demonstrates that significant efforts are required universally to improve sessional activity and meet minimum required quality standards.

On average SHO-DIPST completed just one and a quarter days of training activities during a study week, with significant inter-specialty and regional variation. Similarly, the mean adherence to a specialty specific quality indicators was just 10.6%, with significant variation between specialties. Variation in specialty-specific adherence to QIs should be disseminated to, and be considered by national training committees and specialty groups. User review website such as Junior Reviews (https://www.juniorreviews.com/) provide an opportunity for more granular, contemporaneous collection of self-perceived ‘satisfaction’ data on national level (14). Future modifications and revisions of training systems in the UK should use these data to target core areas for improvement. Although, reassuringly, there was a higher number of ‘training sessions’ in those undertaking JCST-registered training posts, proposals such as ‘Improving Surgical Training’ (4, 15, 16), which seek to move to competency based progression towards CCT, should recognise that a large majority of early years training posts are failing to reach minimum standards, particularly in highlighted specialties. ASiT offers caution that abridging the time to CCT without careful assessment and quality assurance processes may impact the quality of output from UK surgical training programmes (8).

Improving Surgical Training (IST) is a pilot programme designed by the Royal Colleges of Surgery and Health Education England (HEE), which aims to provide surgical trainees with an enhanced quality and quantity of experience from foundation training to consultancy using a series of novel measures. This will be run in parallel to core surgical training as a pilot project from 2018 onwards, with an intake directly from foundation years. The objectives of the programme include: 1. increased exposure to high fidelity simulation; 2. quality assuring trainers and supervisors; 3. using members of the 'extended surgical team' to support surgical training (surgical care practitioners, advanced nurse practitioners or equivalent).

Simulated practice encompasses any activity which aims to imitate a system or environment with the aim of assessing, informing and modifying behaviour (17). Simulated training in surgery has shown benefits to the attainment of early technical (18) and non-technical skills (19), although an evidence base for high-fidelity simulation is still developing. In our 2012 national surgical trainee survey (n=1130), only 41.2% had access to skills simulator facilities, of which only 16.3% had availability out-of-hours and only 54.0% had access in their local hospital (17). Whilst ASiT supports the provision of high-quality simulation, efforts must be made to improve availability and frequency of access for UK trainees if this is to have a meaningful impact on the quality of early years training.

In theory, surgical care practitioners (SCPs) can undertake duties traditionally performed by junior doctors in acute hospital settings, and can have a positive impact on the availability of training opportunities by reducing service demands (20). Use of the non-medical workforce is being actively encouraged by the Royal Colleges of Surgeons, both to support junior surgeons and, where necessary, to staff acute on-call rotas (16). In light of the ASiT/BOTA Lost Tribe study, complementary processes such as the training of non-medical, SCPs should be developed with due consideration to already sparse training opportunities for early-years surgeons in training. Further degradation of training by establishing a workforce of independent, or semi-independent practitioners who compete for the same training

opportunities as surgeons in training may threaten the UK surgical training system, and therefore the care of our future patients (21).

Integrated academic clinical training in surgery challenges SHO-DIPST to build clinical and operative skills alongside research or educationalist training, supported by a specific development framework (22). A recent ASiT survey identified that whilst 58.7% (n=84) of academic-clinical trainees were satisfied with their clinical competence, 37.8% (n=54) felt that their clinical time was focused more on service provision than the acquisition of technical skills (23). Whilst this study does demonstrate a higher mean number of training sessions amongst NIHR trainees, the proportion of training time as a total of time spent in work remains less than 50% even in this group, and requires focus.

Beyond sessional activity, multiple external factors collude to degrade the quality and satisfaction with early years training in surgery in modern NHS practice. The new junior doctor contract has disrupted working practice, impacted trainee morale and increased the frequency and impact of 'rota gaps' (24-26). We urge Health Education England, the Wales Deanery, NHS Education for Scotland and the Northern Ireland Medical and Dental Training Agency to work with trade unions and Local Education and Training Boards to minimise workforce gaps, improve morale amongst pre-specialty registration surgical doctors and properly recompense unscheduled hours.

Regular audit and publication of whether a post meets the minimum JCST criteria should not be aspirational. For transparency, when ranking posts during national selection candidates should be aware of adherence to JSCT QIs, including those beyond sessional activity alone. This aims not only to facilitate candidate choice, but also to allow Heads of Schools of Surgery to identify where to concentrate efforts to improve training.

Strengths and limitations

This is the first study to objectively examine the sessional activities of doctors in training and compare these to nationally recognised training standards. Whilst General Medical Council surveys provide subjective assessments of the quality and delivery of training across a number of domains, they do not record or report daily working practices and are subject to many biases and external influences (27). By utilising a National Research Collaborative model of data collection, the ASiT/BOTA Lost Tribe Study group was able to collect data from over 2500 SHO-DIPST, across 60% of hospitals providing acute care in the UK, and include a high proportion of registered training doctors within all 10 JCST surgical specialties. By encouraging data collection prospectively and proactively through daily contact with colleagues and review of working practices, we ensured an accurate and reproducible methodology across the study periods.

There are a few limitations to the present methodology. Firstly, this study collected only the activity of an SHO-DIPST for the majority of any given session. Whilst sessions can be split into more than one type of activity (for example, conducting a morning ward round, then attending theatre) introducing measurement bias, in practice, where there is less than half a session spent in a given activity is likely to degrade the quality of training received. This is likely, therefore, to have had only minimal impact on the study conclusion. Secondly, whilst objective measures of sessional activities are provided here, there is no subjective assessment of the quality of training or satisfaction of trainees reported. Future analyses should include these measures to provide a subjective assessment of training, comparing this to the total number and types of training sessions, and examining differences between groups. Thirdly, there is no denominator available for the number of non-training SHO-DIPST working in the UK and, as such, it is possible that sampling bias has been introduced here. However, it is likely that non-training doctors have a different set of personal and professional development goals to training doctors, and the large proportion of training doctors included here increases the studies generalisability. Finally, no analysis is made here of centre-level factors that could impact the quality of training. Examples such as

number of rota gaps, centre type (University, specialist or a general hospital) and volume (28-30) should be explored in subsequent analyses.

Conclusions

The ASiT/BOTA Lost Tribe study has highlighted stark deficiencies in the current delivery of early years postgraduate surgical training programmes in the UK. The Joint Committee on Surgical Training and the Specialties Advisory Committees must act urgently to address issues highlighted, and minimise the impact of rising external pressures on surgical training.

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Tables

Table 1. Demographics of included Senior House Officer-grade equivalent doctors in postgraduate surgical training or service (SHO-DIPST)

	n=	% study total	Trainee total*	UK total**	% UK total
Current specialty					
Cardiothoracic Surgery	87	3.4	20	32	62.5
Ear, Nose & Throat (ENT)	154	6.0	52	92	56.5
General Surgery (including subspecialties)	831	32.3	329	357	92.2
Neurosurgery	174	6.7	73	10	N/A
Oral & Maxillofacial Surgery	47	1.8	36	8	N/A
Orthopaedic Surgery	931	36.2	313	268	100
Paediatric Surgery	30	1.2	12	30	40
Plastic and Reconstructive Surgery	186	7.2	76	110	69.1
Urology	66	2.6	31	101	30.7
Vascular Surgery	63	2.5	18	56	32.1
	2569	**100**	**960**	**1064**	**100**
SHO-DIPST type					
Allied Healthcare Professional	5	0.2			
Core surgical trainee	902	35.1			
Dental core trainee	37	1.4			
Foundation year 2 doctor	647	25.2			
GP trainee	70	2.7			
Locum appointment for service	219	8.5			
Locum appointment for training	21	0.8			
Other locum doctor	112	4.3			
Teaching or research fellow	21	0.8			
Other trust grade doctor	383	14.9			
	2569	**100**			

*SHO-DIPST = Senior house officer-equivalent grade doctor in postgraduate surgical training or service. *Trainee total = Core surgical trainees, dental core trainees, or locum appointment for training doctors working in each specialty included in the study. **UK total = Total number of core surgical trainees working in each specialty in the UK, as referenced from the Joint Committee on Surgical Training. For Neurosurgery and Oral and Maxillofacial Surgery, run-through training programmes exist, this UK total includes both 'run-through' trainees and core surgical trainees within the specialty, therefore cannot be interpreted here. Duplication of SHO-DIPST records (i.e. submissions from the same SHO-DIPST from different data periods) may overestimate the absolute proportion of SHO-DIPST in the UK represented within this study.*

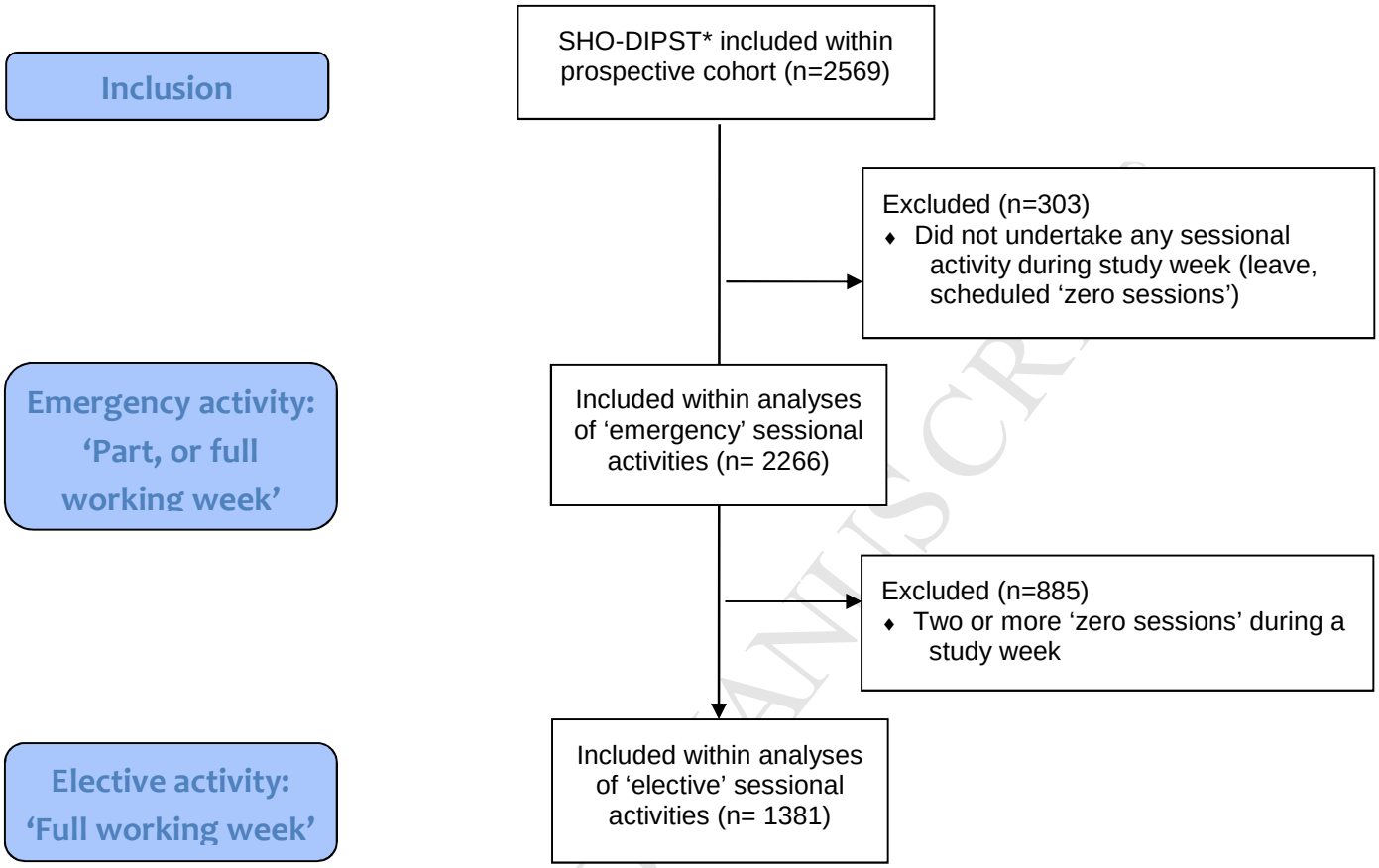
Table 2. Summary of adherence to five included JCST quality indicators

Quality indicator	Description	Adherence (%)
QI 2	**Formal teaching** Trainees in surgery should have at least two hours of facilitated formal teaching each week (on average). For example, locally provided teaching, regional meetings, annual specialty meetings, journal clubs and x-ray meetings.	13.2
QI 4	**Audit and research** Trainees in surgery should have easy access to educational facilities, including library and IT resources, for personal study, audit and research and their timetables should include an equivalent to half a day per week to allow for this.	13.3
QI 10	**Consultant supervised sessions** All trainees in Core Surgery should have the opportunity to attend five consultant supervised sessions of four hours each week.	19.5
QI 12	**Emergency care** All trainees in Core Surgery should have the opportunity to be involved with the management of patients presenting as an emergency at least once each week (on average), under supervision and appropriate to their level of training.	53.1
QI 14	**Multidisciplinary team meetings** All trainees in Core Surgery should have the opportunity to attend one MDT meeting, or equivalent, per week where appropriate.	6.0
QI2,4,10,12,14	**All five included quality indicators**	0.3

Table 3. Adherence to generic and specific JCST Quality Indicator 10 guidelines, by specialty

Specialty	Requirements for specialty specific JCST Quality Indicator 10	Adherence to generic QI 10 (%)	Adherence to specific QI 10 (%)
Cardiothoracic Surgery	Attend three operating sessions and at least one outpatient clinic each week.	22.4	4.1
General Surgery	Attend three supervised operating sessions (one of which should be an emergency session) and two supervised outpatient clinics each week.	18.9	6.9
Otolaryngology	Attend three operating lists (at least one as the principle trainee) and three clinics (including emergency clinics) each week.	32.9	6.6
Oral and maxillofacial surgery	Attend three operating lists and three outpatient clinics each week. These should include emergency lists and clinics.	37.0	3.7
Neurosurgery	Attend at least one consultant led operating session and one outpatient clinic each week.	17.3	7.6
Paediatric Surgery	Attend three operating sessions (one of which should be an emergency session) and at least one outpatient clinic each week.	16.7	8.3
Plastic Surgery	Attend three operating sessions (one of which should be an emergency session) and at least one outpatient clinic each week.	20.0	5.3
Trauma and orthopaedics	Attend three operating sessions (2 x trauma and 1 x elective) and at least one fracture clinic each week.	15.0	5.2
Urology	Attend at least three operating sessions, (including flexible cystoscopy, but at least two GA operating lists per week) and at least one outpatient clinic each week.	42.8	42.8
Vascular Surgery	Attend three vascular lists per week, one of which may be an interventional radiology list, and one vascular outpatient clinic and one MDT each week.	34.2	15.8

Figure 1. Flow chart of study inclusion.



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Highlights

- Four early years postgraduate surgical training posts met national quality indicators.
- There exists significant inter-specialty and regional variation in surgical training.
- Half of doctors had no exposure to theatre or clinic during the study week.
- This is the first study to assess sessional activities against training quality standards.
- Significant efforts are required universally to improve training standards.