

4. Results

4.1 Development and conduction of survey

A total of 102 questionnaires were obtained from the different hospitals. Five of these questionnaires were not fully completed and were not included. A number of 44 were from urban hospital practices and 53 from rural hospital practices. Table 4 illustrates the number of questionnaires obtained from each hospital.

Urban hospital practice (n=44)	Rural hospital practice (n=53)
Kalafong Hospital (n=11)	Elim Hospital (n=16)
Pretoria Academic Hospital (n=11)	Tshilidzini Hospital (n=12)
Mamelodi Hospital (n=8)	Donald Fraser Hospital (n=5)
Rob Ferreira Hospital (n=14)	Themba Hospital (n=15)
	Warmbaths hospital (n=5)

Table 4. Questionnaires obtained from different hospitals

Table 5 illustrates a summary of the demographic data for both urban and rural general practitioners concerning age, sex, years in practice and postgraduate training.

Age	23-30	30-35	35-40	40-50	>50
<i>Urban (n=44)</i>	39%	9%	18%	16%	16%
<i>Rural (n=53)</i>	55%	15%	21%	6%	2%
Sex	Male	Female			
<i>Urban</i>	60%	40%			
<i>Rural</i>	73%	27%			
Years in practice	<5	6-10	11-20	21-30	>30
<i>Urban</i>	42%	11%	21%	21%	5%
<i>Rural</i>	62%	15%	19%	4%	0%
Postgraduate training	MMed(Fam Med)	Diploma (Anesthesia e.g.)	Other (ATLS e.g.)		
<i>Urban</i>	30%	23%	32%		
<i>Rural</i>	21%	11%	21%		

Table 5. Demographic data for both urban and rural hospital groups.

Considering the remoteness of the rural hospitals, the hospitals included in the study varied from being between 50 and 250 km from a hospital with specialist services.

4.1.1 Incidence of performance

Table 6 illustrates the incidence of performance for every procedure that was included in the questionnaire. Additional procedures were mentioned at the space provided at the end of the questionnaire.

Table 6. Incidence of performance

<i>Procedure</i>		<i>Incidence of performance by doctors (%)</i>
Emergency procedures		
1	Oro/nasotracheal intubation	95.79
2	Cricothyroidotomy	26.32
3	Vascular access: Peripheral arm veins	100
4	Vascular access: Femoral vein	66.32
5	Vascular access: Great saphenous vein	56.84
6	Subclavian vein catheterization	56.84
7	Internal jugular vein catheterization	45.26
8	Pretibial intraosseous puncture/ infusion	41.05
9	Intercostal drain insertion	90.53
10	Lumbar puncture	90.53
11	Arterial blood puncture for blood sampling	67.37
12	Pericardiocentesis	23.16
13	Umbilical line placement	50.53
14	Suprapubic catheterization and puncture	75.79
15	Eye injury examination	89.47
Surgical procedures		
16	Reduction of uncomplicated forearm fractures	69.47
17	Sigmoidoscopy and proctoscopy	29.47
18	Dilatation and curettage	80.00
19	Episiotomy	73.68

<i>Surgical procedures (cont.)</i>		<i>Incidence of performance by doctors (%)</i>
20	Normal vaginal delivery	78.95
21	Cesarian section	74.74
22	Sterilization	70.53
23	Ectopic pregnancy surgery	54.74
24	Circumcision	72.63
25	Excision of external trombosed hemorrhoids, Injection or ligation of internal hemorrhoids	38.95
26	Appendectomy	38.95
27	Tonsillectomy and adenoidectomy	27.37
28	Wrist block and digital nerve block	56.84
29	Pudendal nerve block	15.79
30	Brachial plexus block	16.84
Office procedures		
31	Injection of shoulder joint	29.47
32	Colposcopy	14.74
33	Paronychia incision and drainage	71.58
34	Upper gastrointestinal endoscopy	9.47
35	Knee joint aspiration	78.95
36	Liver biopsy	5.26
37	Indirect laryngoscopy	30.53
38	Epistaxis and nasal packing	95.79
39	Bone marrow aspiration	45.26
40	Aspiration of pleural effusion	85.26
41	Reduction of shoulder dislocation	81.05
42	Reduction of elbow dislocation	53.68
43	Reduction of interphalangeal joint dislocation	65.26
44	Reduction of hip dislocation	28.42
45	Nasopharyngoscopy	10.53
46	Slit lamp examination	13.68
47	Rectal examination	97.89
48	Vaginal examination	98.95

Procedure		Incidence of performance by doctors (%)
Imaging procedures		
49	Musculoskeletal ultrasound	
50	Abdominal CT scan	9.47
51	Brain CT scan	25.26
52	Chest X-Ray	30.53
53	Abdominal X-Ray	92.63
54	Pelvic X-Ray	93.68
55	Neck X-Ray	92.63
56	Obstetric ultrasound	91.58
57	Abdominal ultrasound	82.11
		58.95

The following additional procedures were mentioned by general practitioners working in rural hospital practices: Debridement, limb amputation, laparotomy for peptic ulcer perforation, herniorrhaphy, incision and drainage of an abscess, suturing of lacerations, skin grafting, hydrocelectomy, hydrocele aspiration, prostate biopsy, breast biopsy, fistulectomy, ECG, removal of foreign bodies from nostrils, eyes and ears, removal of lipomas, ganglia and breast lumps, open reduction and internal fixation of forearm and ankle fractures, general anesthesia, pap smear, hysterectomy and assisted deliveries.

The following additional procedures were reported by general practitioners working in urban hospital practices: hydrocelectomy, pap smear, manipulation of the back, application of casts, trigger point infiltration, incision and drainage of an abscess, skin and breast biopsies, fine needle aspiration, cervix biopsy, tonometry for measurement of intra-ocular pressure, myringotomy, regional nerve blocks: femoral nerve block, suboccipital nerve block, ECG, urinary catheterization, suturing, removal of foreign bodies from nostrils, eyes and ears, colpotomy (culdocentesis).

4.1.2 Frequency of performance

Table 7 illustrates the frequency of performance of the procedures evaluated.

Table 7. Frequency of performance

<i>Procedure</i>		<i>Frequency of performance per annum</i>			
		<i>>20</i>	<i>10-20</i>	<i>5-10</i>	<i><5</i>
<i>Emergency procedures</i>					
1	Oro/nasotracheal intubation	52.63	14.74	11.59	15.79
2	Cricothyroidotomy	0	0	3.16	23.16
3	Vascular access: Peripheral arm veins	91.58	4.21	1.05	3.16
4	Vascular access: Femoral vein	22.11	12.63	9.47	23.16
5	Vascular access: Great saphenous vein	5.5	11.1	11.1	74.07
6	Subclavian vein catheterization	5.26	11.58	7.37	32.63
7	Internal jugular vein catheterization	2.11	9.47	4.21	29.47
8	Pretibial intraosseous puncture/ infusion	0	6.32	7.37	27.37
9	Intercostal drain insertion	32.63	23.16	17.89	16.84
10	Lumbar puncture	42.11	13.68	11.58	22.11
11	Arterial blood puncture for blood sampling	30.53	15.79	8.42	15.79
12	Pericardiocentesis	0	2.11	1.05	20
13	Umbilical line placement	6.32	6.32	9.47	26.32
14	Suprapubic catheterization and puncture	12.63	11.58	22.11	29.47
15	Eye injury examination	42.11	17.89	18.95	10.53
<i>Surgical procedures</i>					
16	Reduction of uncomplicated forearm fractures	29.47	12.63	10.53	17.89
17	Sigmoidoscopy and proctoscopy	3.16	6.32	10.53	12.63
18	Dilatation and curettage	49.47	17.89	5.26	8.42
19	Episiotomy	27.37	12.63	16.84	15.79
20	Normal vaginal delivery	35.79	12.63	9.47	20
21	Cesarian section	41.05	5.26	17.89	10.53
22	Sterilization	23.16	22.11	14.74	11.58
23	Ectopic pregnancy surgery	11.58	6.32	11.58	26.32
24	Circumcision	25.26	10.53	14.74	22.11

Surgical procedures (cont.)		Frequency of performance per annum			
		>20	10-20	5-10	<5
25	Excision of external thrombosed hemorrhoids, Injection or ligation of internal hemorrhoids	3.16	7.37	9.47	15.79
26	Appendectomy	3.16	6.32	8.42	21.05
29	Pudendal nerve block	2.11	4.21	2.11	7.37
30	Brachial plexus block	2.11	2.11	3.16	9.47
Office procedures					
31	Injection of shoulder joint	6.32	4.21	4.21	14.74
32	Colposcopy	2.11	4.21	1.05	7.37
33	Paronychia incision and drainage	17.89	17.89	11.58	23.16
34	Upper gastrointestinal endoscopy	4.21	2.11	0	3.16
35	Knee joint aspiration	23.16	14.74	20	21.05
36	Liver biopsy	1.05	2.11	4.21	17.89
37	Indirect laryngoscopy	7.37	1.05	4.21	17.89
38	Epistaxis and nasal packing	24.21	26.32	15.79	29.47
39	Bone marrow aspiration	2.11	7.37	9.47	26.32
40	Aspiration of pleural effusion	31.58	17.89	23.16	12.63
41	Reduction of shoulder dislocation	11.58	6.32	31.58	32.63
42	Reduction of elbow dislocation	5.26	9.47	10.53	27.37
43	Reduction of interphalangeal joint dislocation	4.21	12.63	20	27.37
44	Reduction of hip dislocation	1.05	2.11	1.05	24.21
45	Nasopharyngoscopy	2.11	1.05	1.05	6.32
46	Slit lamp examination	1.05	4.21	4.21	4.21
47	Rectal examination	82.11	8.42	5.26	2.11
48	Vaginal examination	95.79	2.11	0	0
49	Musculoskeletal ultrasound	0	2.11	3.16	4.21
Imaging procedures					
50	Abdominal CT scan	4.21	6.32	3.16	11.58
51	Brain CT scan	5.26	6.32	6.32	11.58
52	Chest X-Ray	86.32	3.16	0	2.11
53	Abdominal X-Ray	75.79	12.63	0	3.16

<i>Imaging procedures (cont.)</i>		<i>Frequency of performance per annum</i>			
		<i>>20</i>	<i>10-20</i>	<i>5-10</i>	<i><5</i>
54	Pelvic X-Ray	68.42	15.79	1.05	5.26
55	Neck X-Ray	65.26	16.84	6.32	3.16
56	Obstetric Ultrasound	44.21	18.95	12.63	6.32
57	Abdominal Ultrasound	16.84	17.89	13.68	8.42

4.1.3 Importance rating

General practitioners rated the every procedure according to its importance regarding their own practice situation, irrespective of whether they performed the procedure or not. The results are illustrated in Tables 8, 9, 10 and 11.

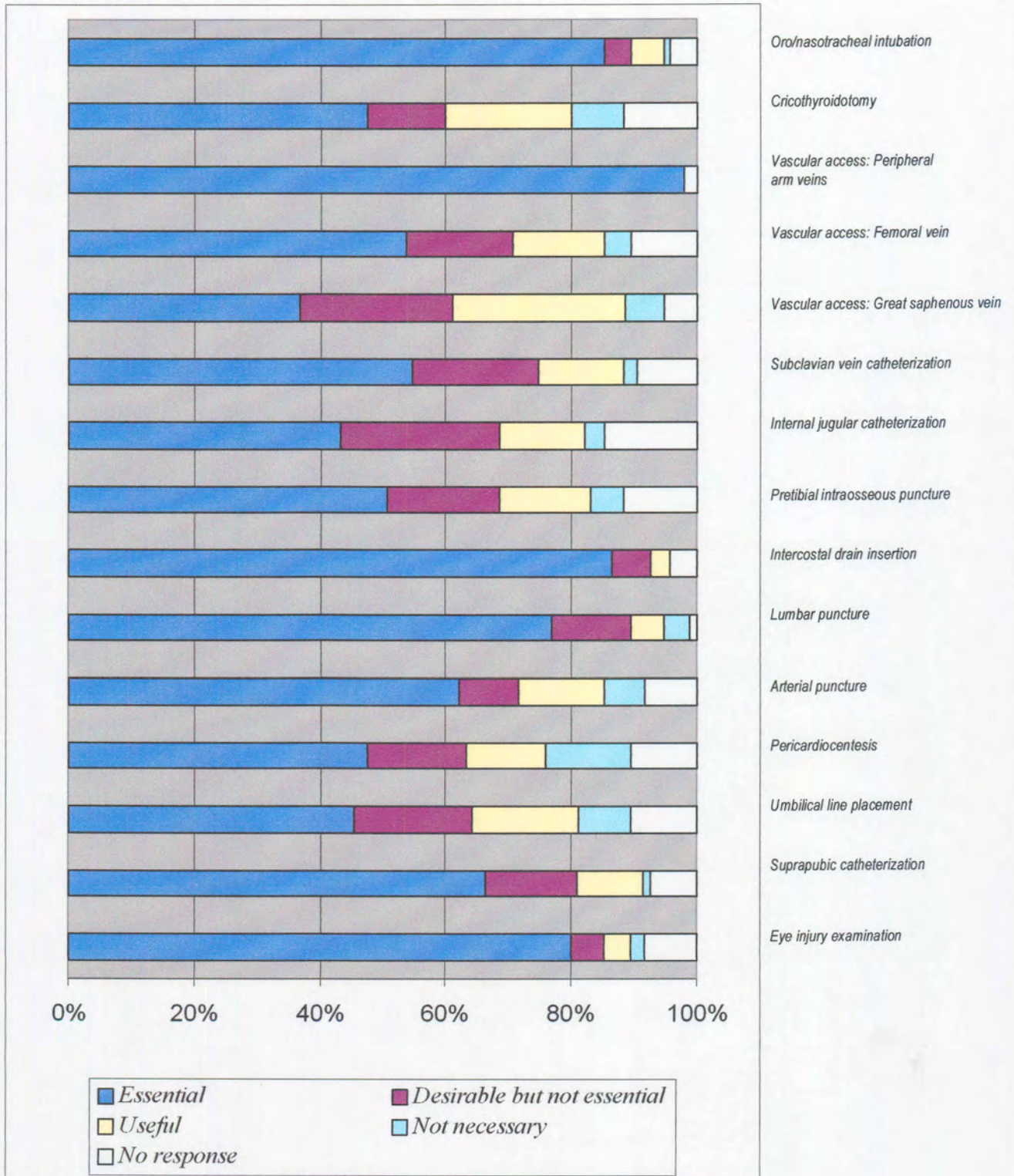


Table 8. Importance rating of emergency procedures.

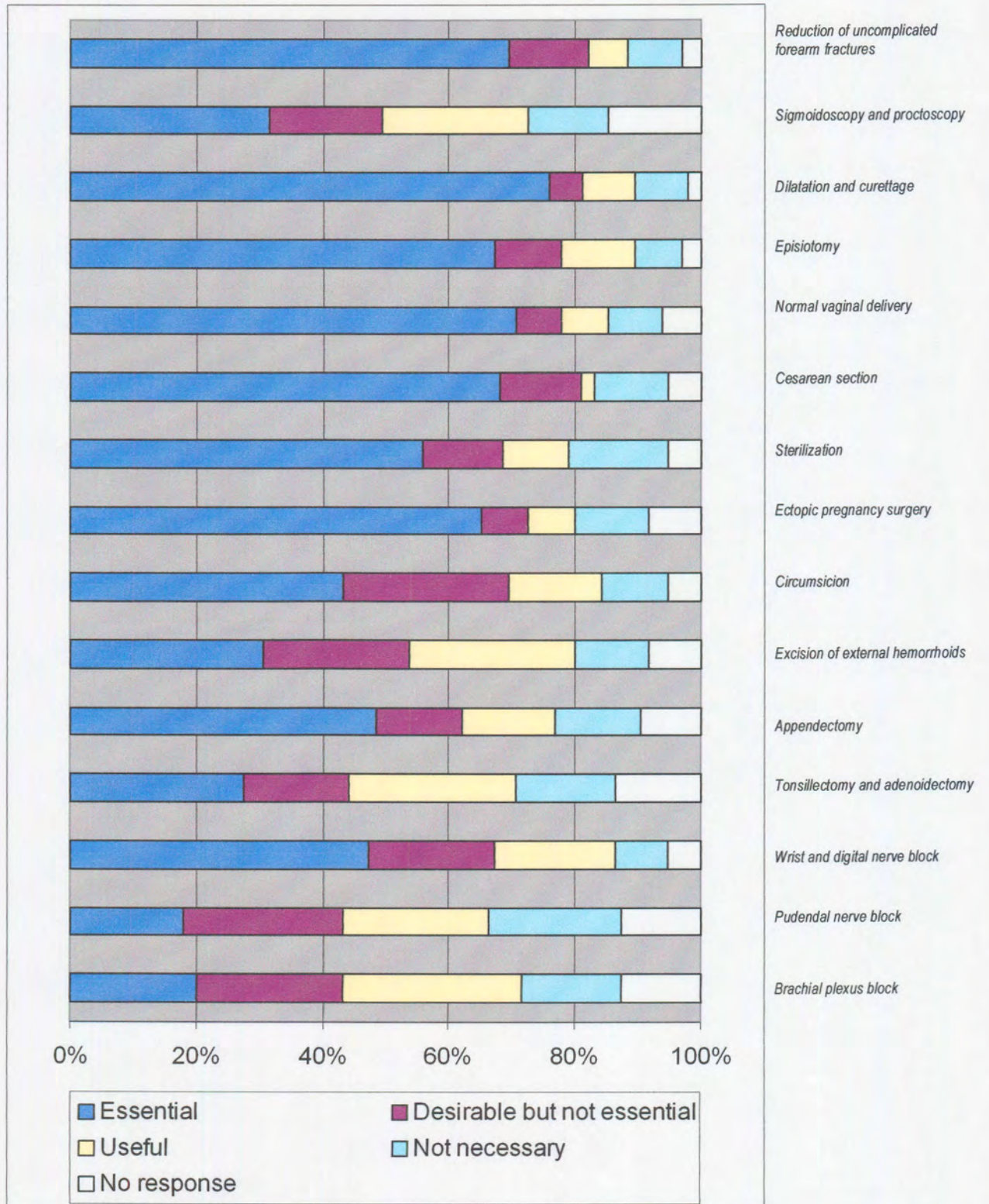


Table 9. Importance rating of surgical procedures

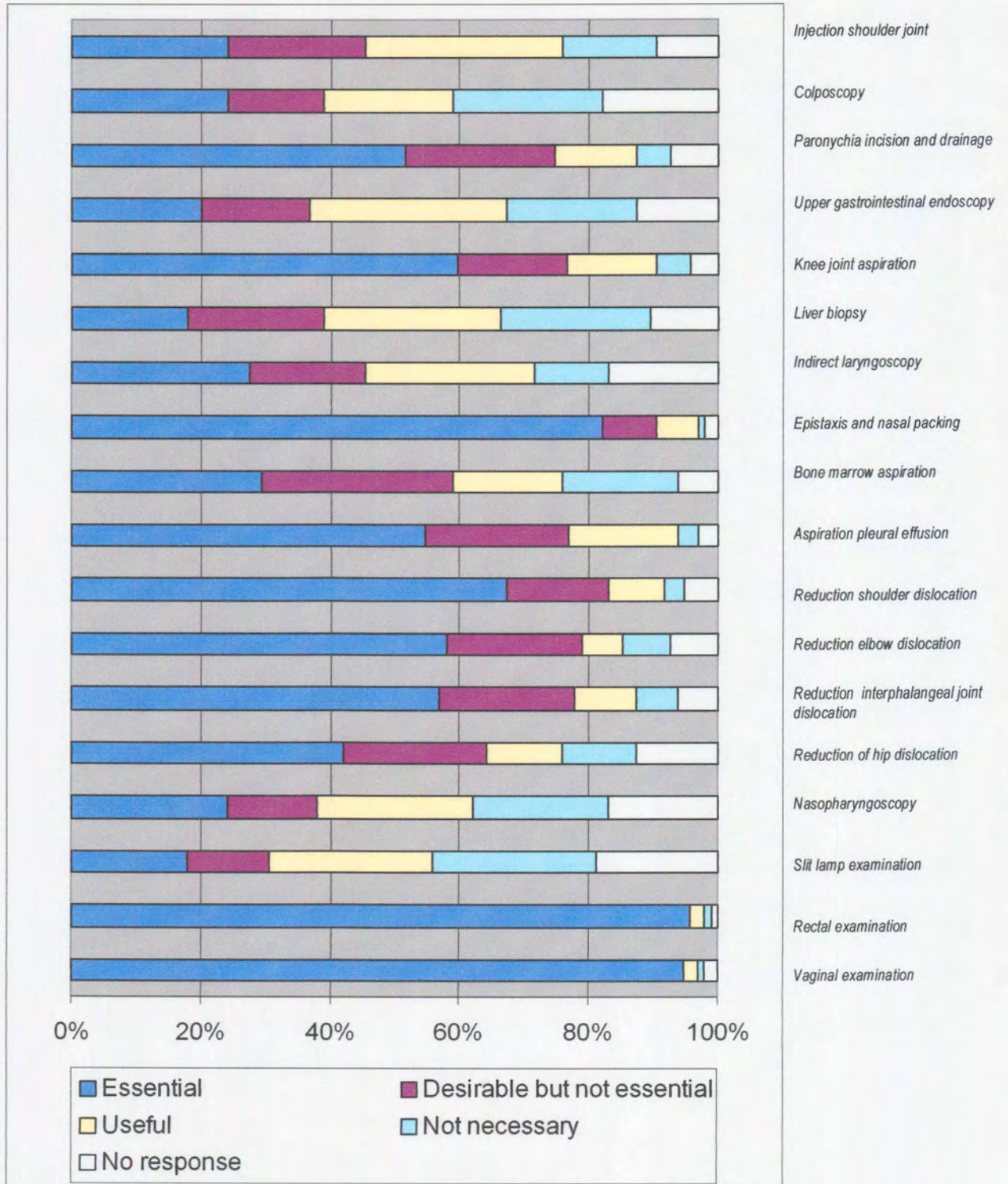


Table 10. Importance rating of office procedures

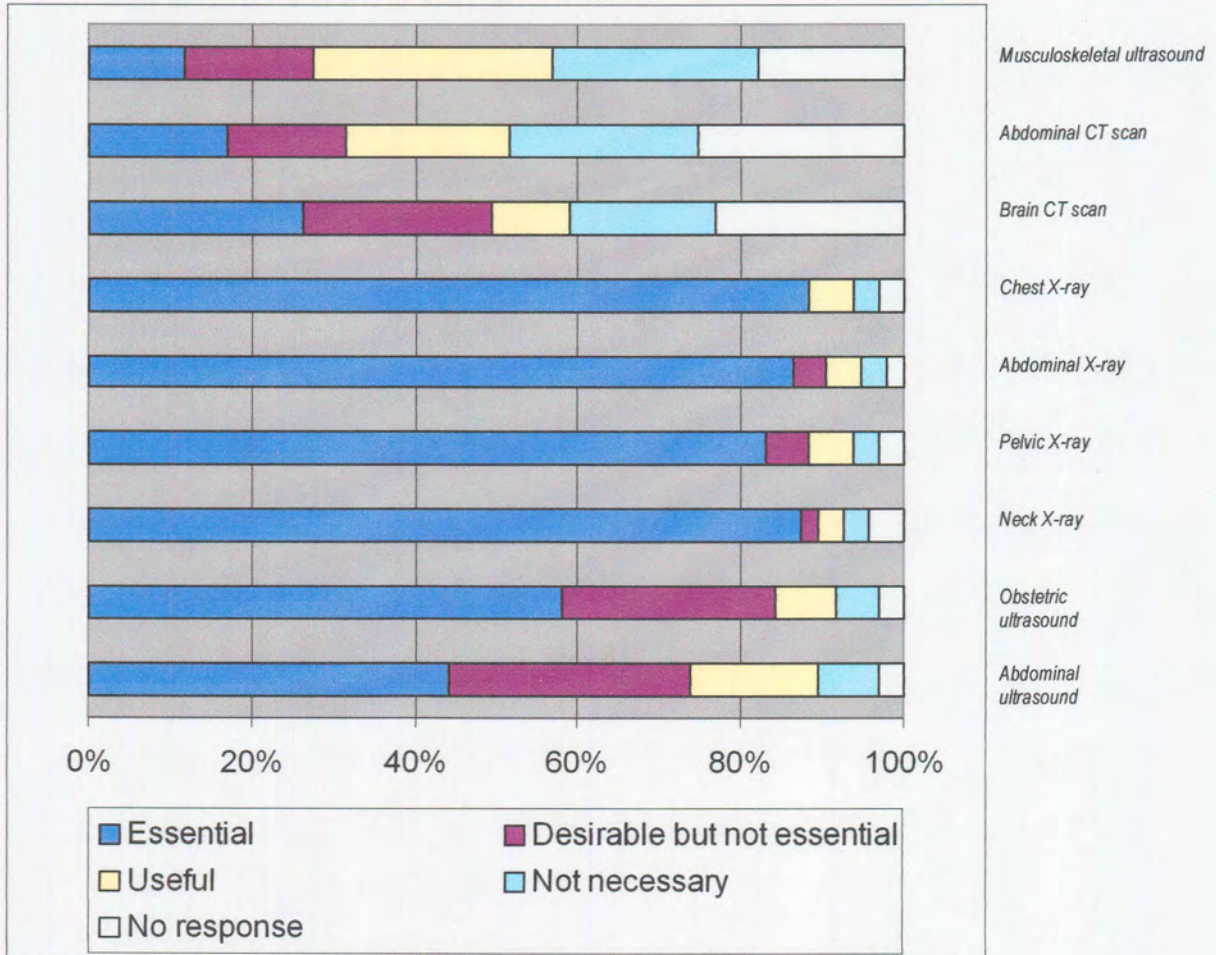


Table 11. Importance rating of imaging procedures



4.1.4 Measure of comfort rating

General practitioners rated their measure of comfort with which they perform every procedure. The results are illustrated in Table 12, 13, 14 and 15.

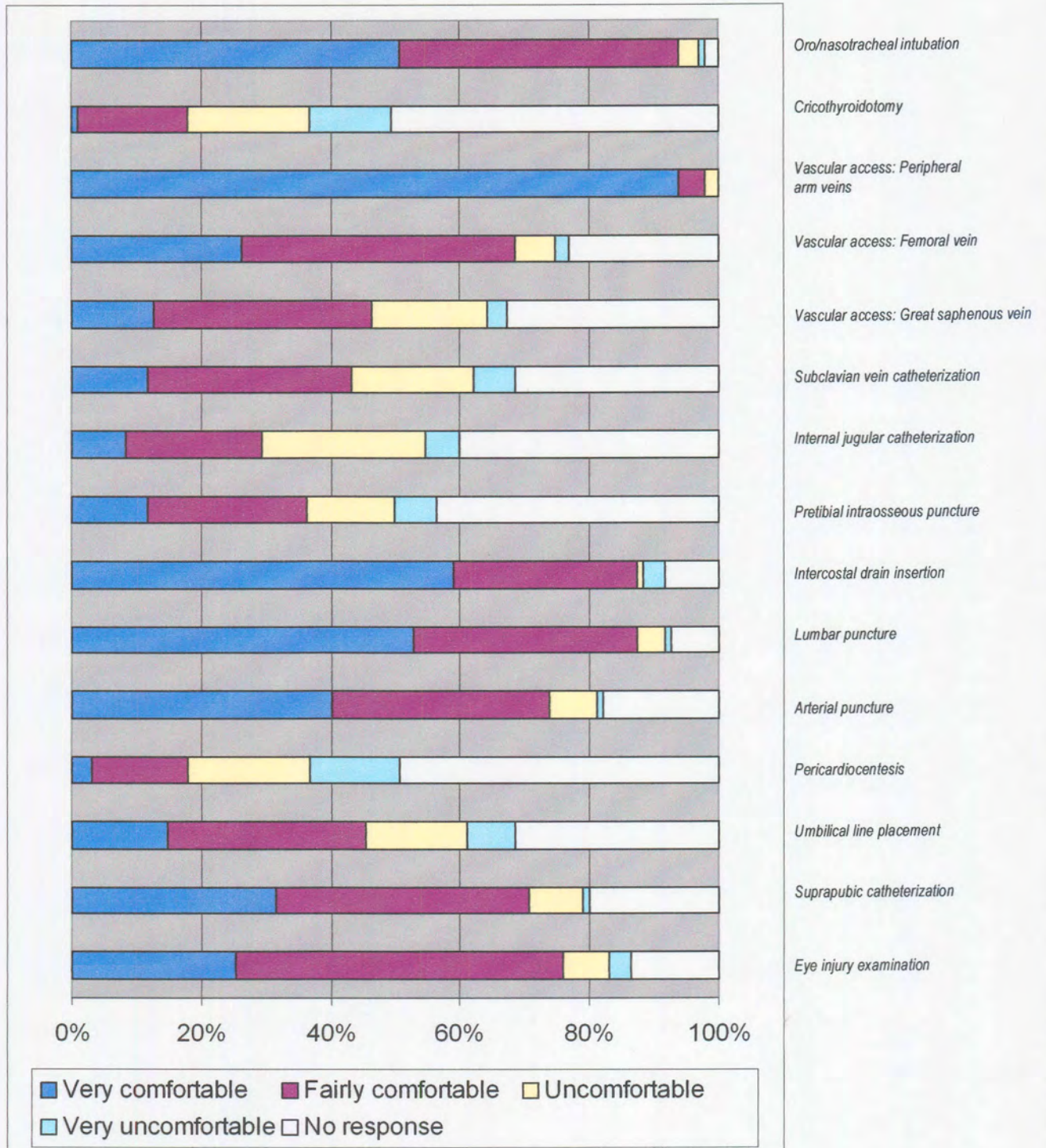


Table 12. Comfort with which emergency procedures are performed

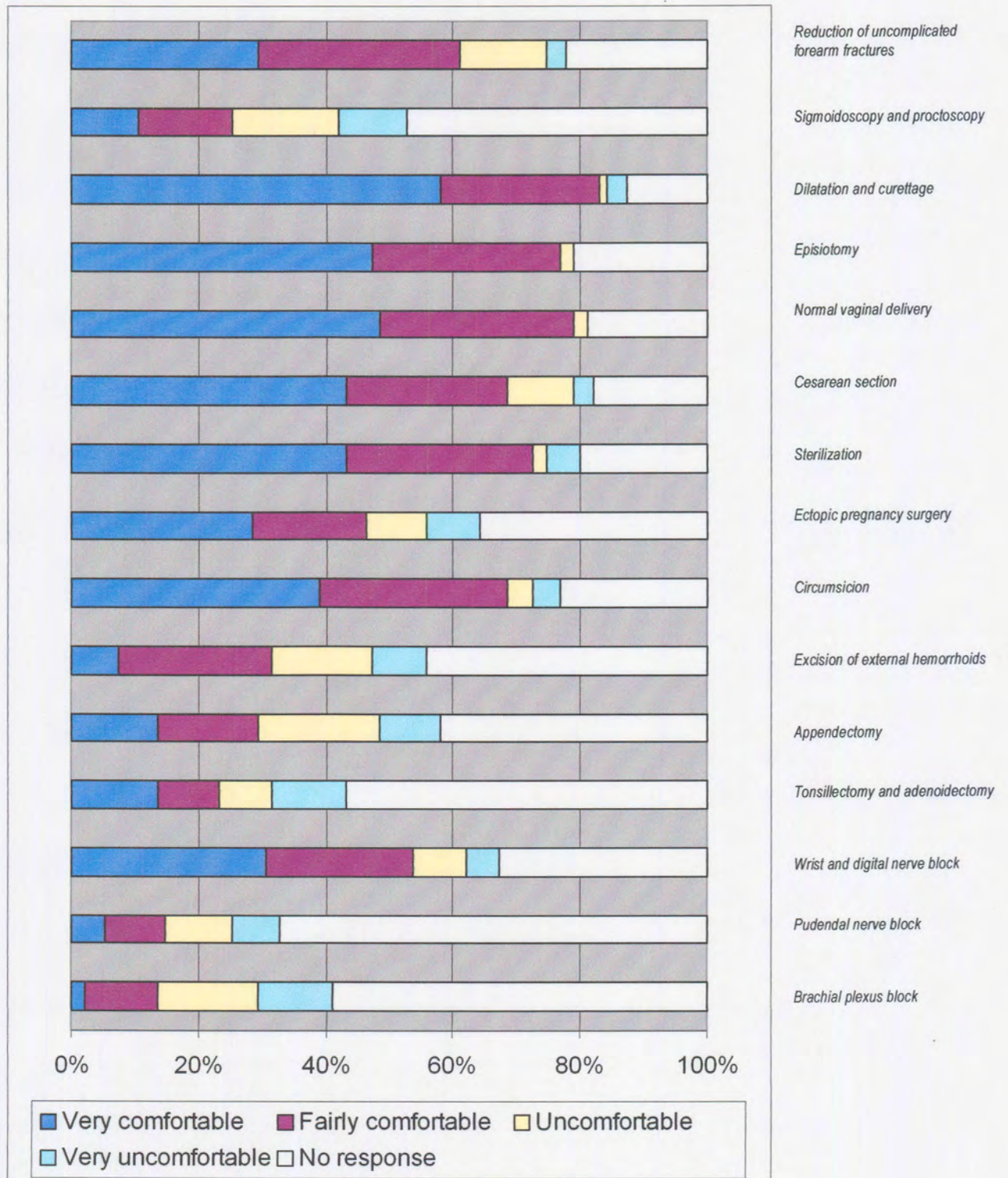


Table 13. Comfort with which surgical procedures are performed.

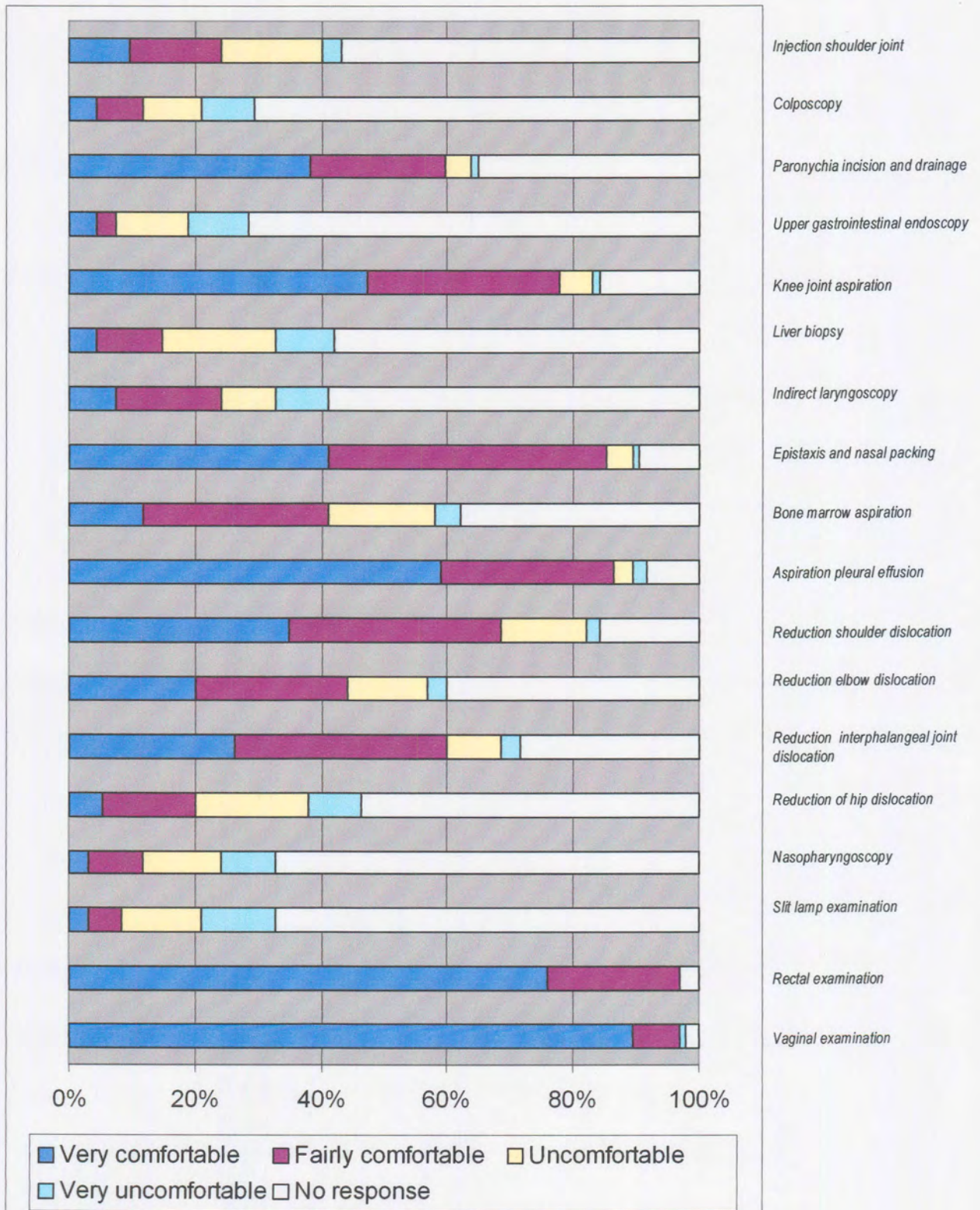


Table 14. Comfort with which office procedures are performed

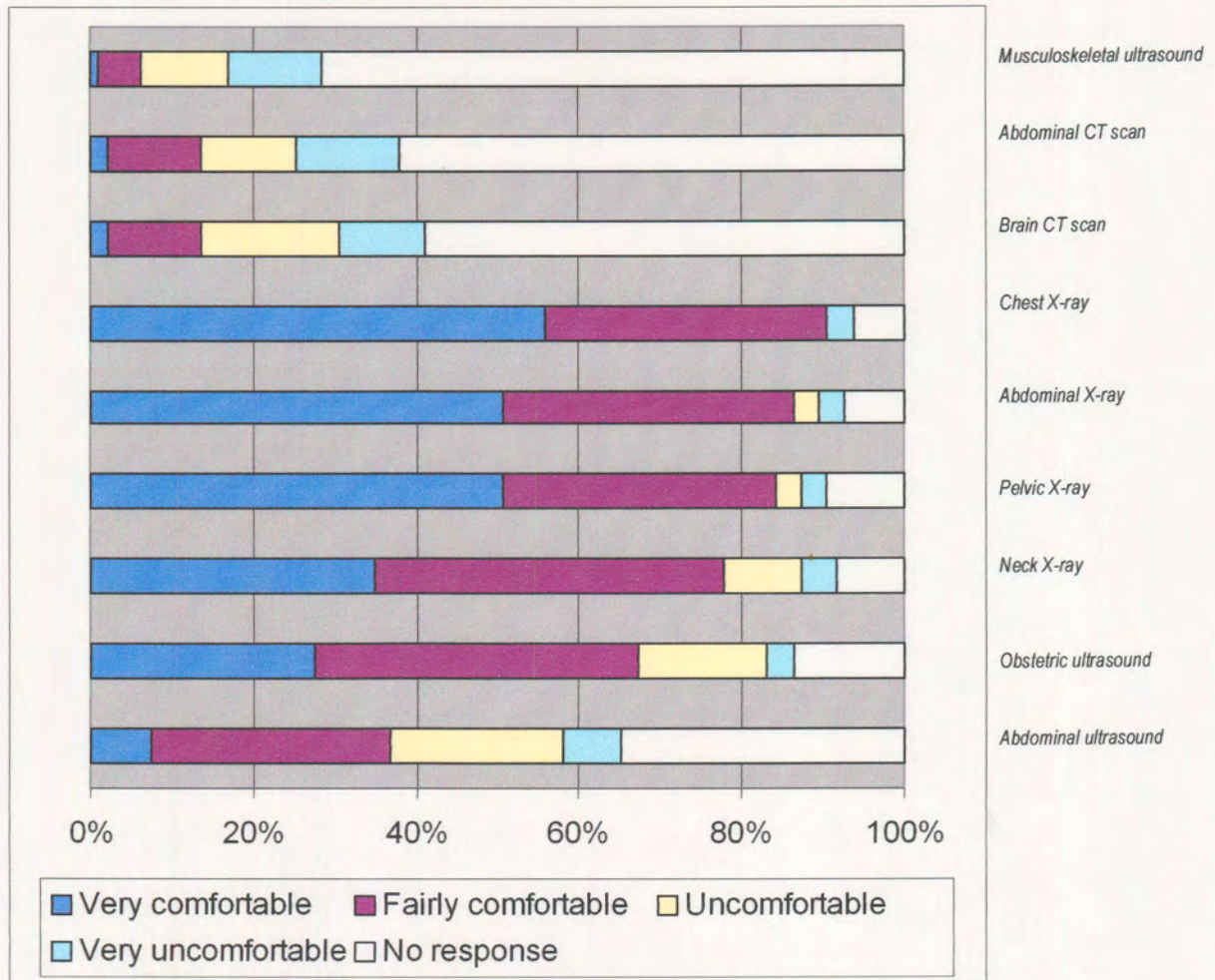


Table 15. Comfort with which imaging procedures are performed.



4.1.5 Difficulties of performance

Tables 16,17,18 and 19 illustrate the distribution of difficulties that were encountered by general practitioners in the performance of the procedures evaluated.

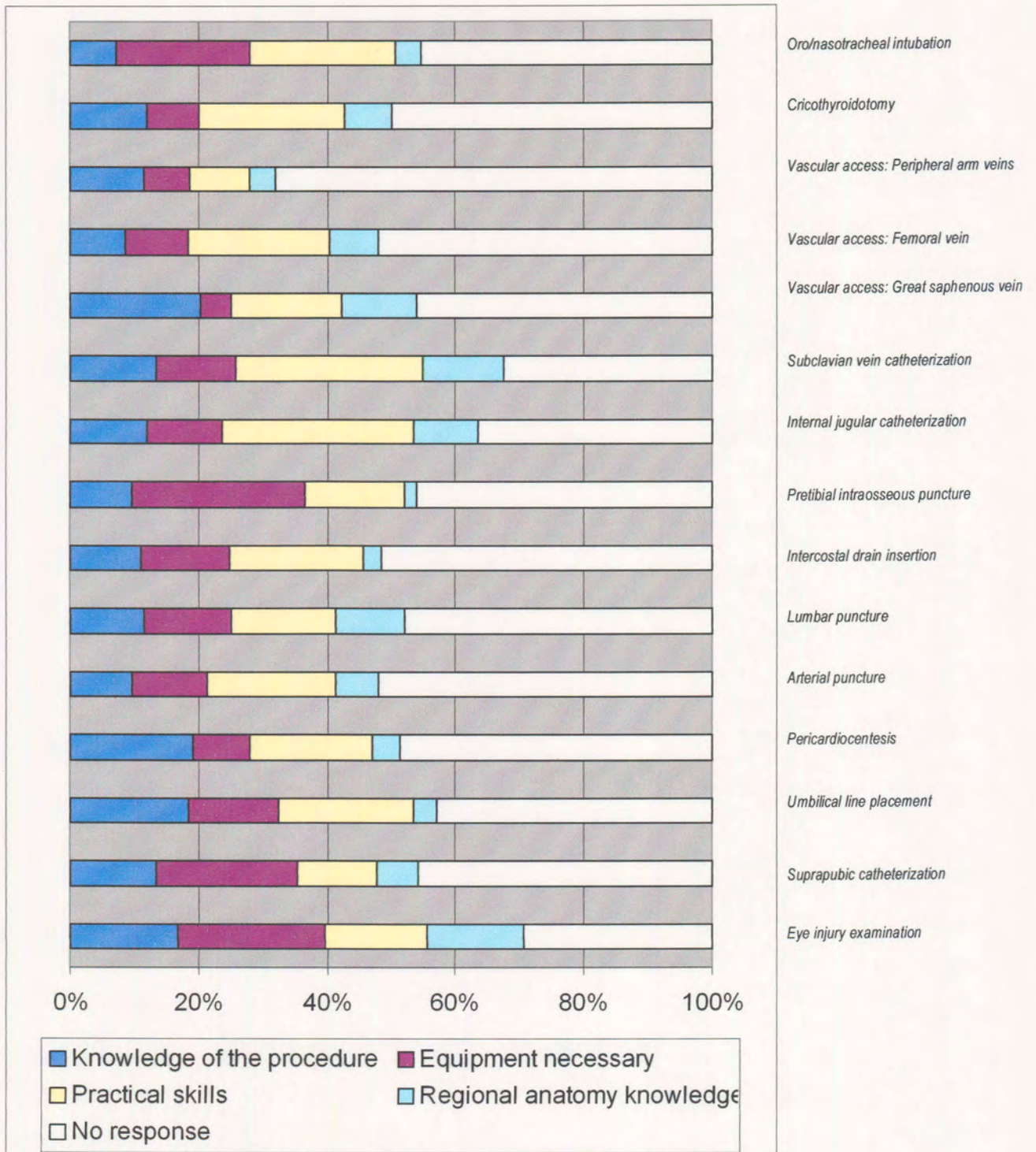


Table 16. Difficulties with emergency procedures

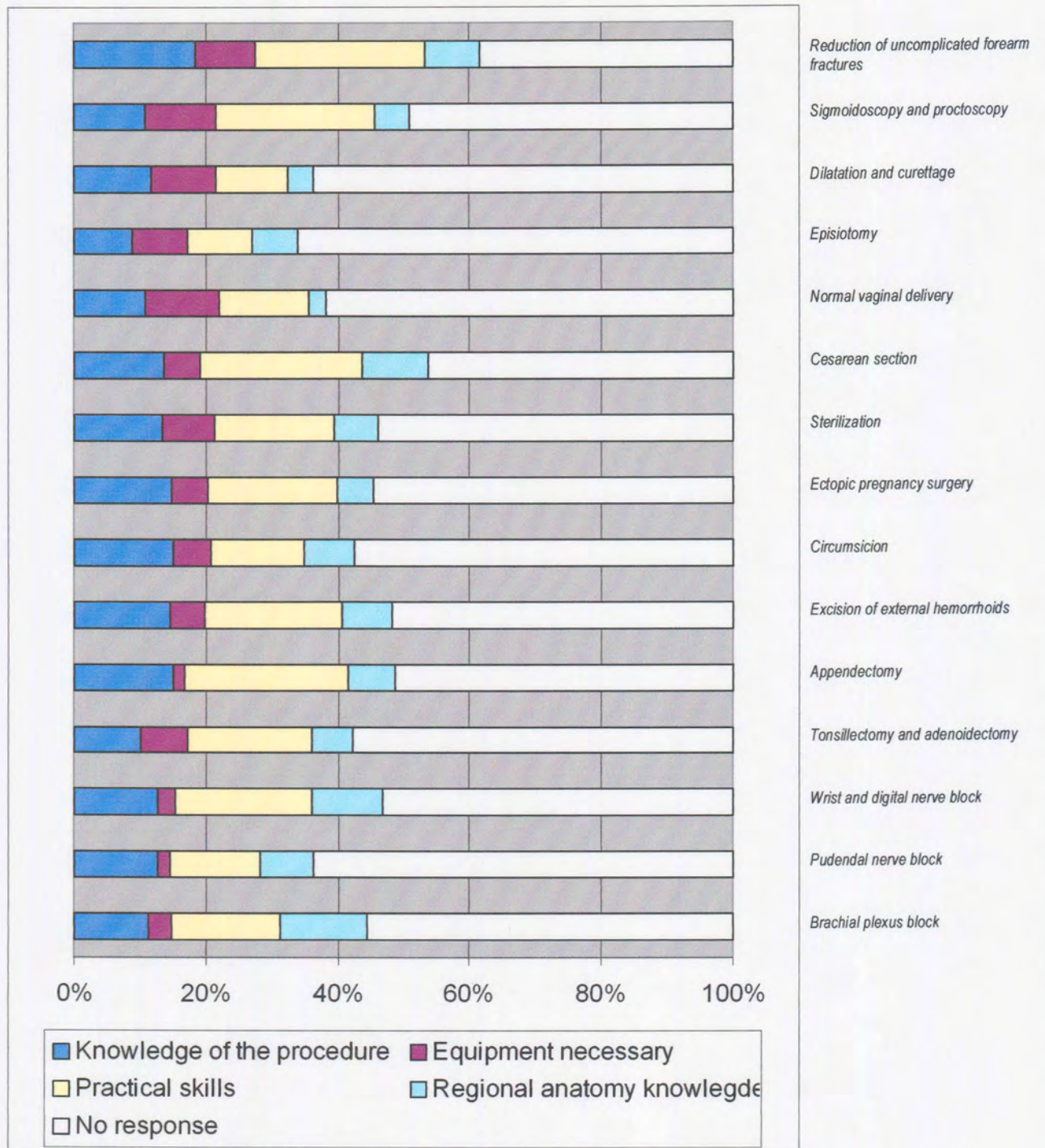


Table 17. Difficulties with surgical procedures

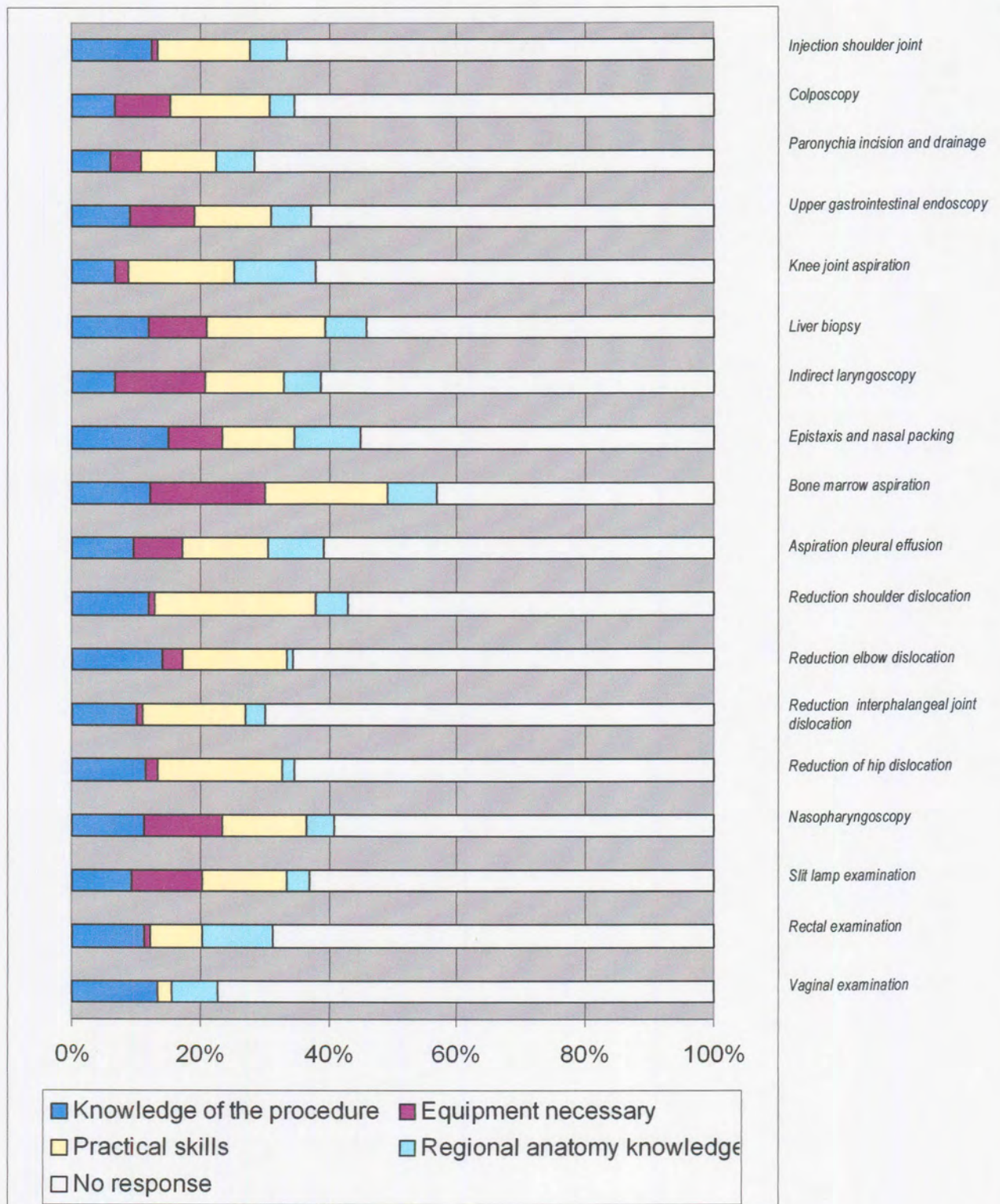


Table 18. Difficulties with office procedures

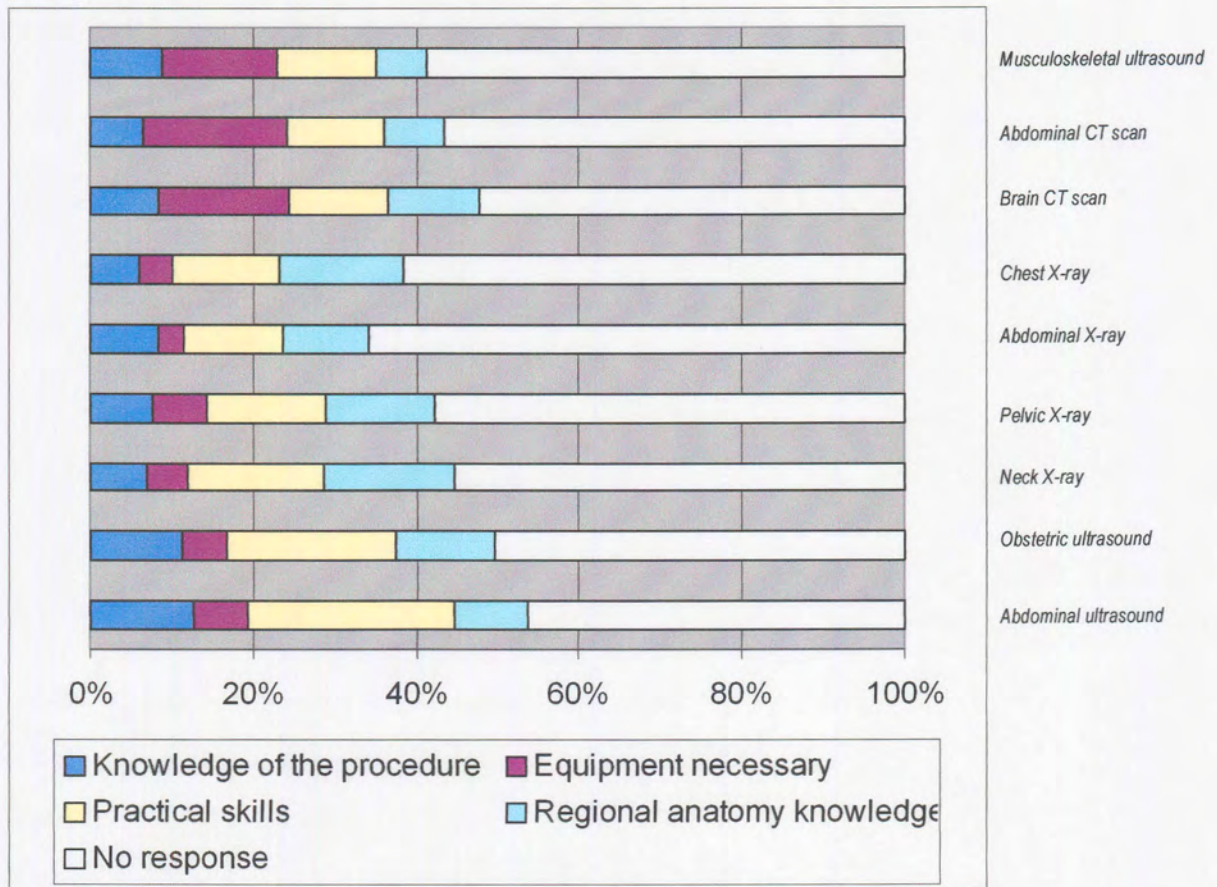


Table 19. Difficulties with imaging procedures

4.1.6 Complications

Table 20 illustrates the complications that were reported by general practitioners for all the procedures.

Table 20. Complications reported for all the procedures

<i>Procedure</i>	<i>Complication</i>	<i>%</i>	<i>Compli- cation</i>	<i>%</i>	<i>Compli- cation</i>	<i>%</i>	<i>Compli- cation</i>	<i>%</i>
<i>Oro/nasotracheal intubation</i>	Esophageal intubation	36.84	Laryngo-spasm	36.84	Not able to visualize the vocal cords	47.37		
<i>Cricothyroidotomy</i>	Unable to find entry site for needle	8.42	Vocal cord paralysis	2.10	Esophageal perforation	1.05	Thyroid perforation	1.05
<i>Vascular access: Peripheral arm veins</i>	Brachial artery puncture	10.53	Median nerve damage	1.05	Inability to locate vein	47.37		
<i>Vascular access: Femoral vein</i>	Femoral artery puncture	28.42	Femoral nerve transection and/or puncture	1.05	Inability to locate vein	33.68	Hip joint sepsis	1.05
<i>Vascular access: Great saphenous vein</i>	Inability to locate vein	32.63	Saphenous nerve damage	0	Arterial transection	2.11		
<i>Subclavian vein catheterization</i>	Inability to locate vein	45.26	Subclavian artery puncture	12.63	Hemopneumothorax	9.47	Brachial plexus puncture	0
<i>Internal jugular vein catheterization</i>	Inability to locate vein	37.89	Pneumothorax	5.26	Common carotid artery puncture	7.37	Chylothorax	1.05
<i>Pretibial intraosseous puncture/ infusion</i>	Inability to find the correct site of placement	14.74	Epiphyseal plate injury	3.16	Osteomyelitis	4.21	Subcutaneous or subperiosteal infiltration	15.79
<i>Intercostal drain insertion</i>	Inability to find the correct site of placement	16.84	Bleeding from intercostal vessels	17.89	Damage to the intercostal nerves	2.11	Puncture of intrathoracic and/or abdominal organs	5.26
<i>Lumbar puncture</i>	Inability to find the correct placement of the needle	33.68	Inability to appreciate the position of the needle	15.79	Bloody tap	45.26		

<i>Procedure</i>	<i>Complication</i>	<i>%</i>	<i>Compli- cation</i>	<i>%</i>	<i>Compli- cation</i>	<i>%</i>	<i>Compli- cation</i>	<i>%</i>
<i>Arterial blood puncture for blood sampling</i>	Inability to perform a radial artery puncture	20	Inability to locate the femoral artery	6.32	Uncertain on which artery to use in pediatric patients	22.11		
<i>Pericardiocentesis</i>	Inability to find the correct site of placement	10.53	Inability to appreciate the position of the needle while placing	18.95	Injury to a coronary vessel, inferior vena cava, aorta, esophagus	2.11	Aspiration of ventricular blood	3.16
<i>Umbilical line placement</i>	Inability to find the umbilical vein	21.05						
<i>Suprapubic catheterization and puncture</i>	Unsure about the site of placement of the puncture	17.89	Intra-abdominal placement	10.53				
<i>Eye injury examination</i>	Unsure about anatomical structures	26.32	Inability to visualize the retina and optic disc	37.89	Unsure of innervation of the eye musculature	11.58		
<i>Reduction of uncomplicated forearm fractures</i>	Unsure about correct rotation	38.95						
<i>Sigmoidoscopy and proctoscopy</i>	Unsure of the anatomy of the bowel mucosa	7.37	Unsure about the differences between sigmoid colon, rectum and anus	10.53	Bowel perforation	3.16		
<i>Dilatation and curettage</i>	Unsure about the extent of the uterus in a non pregnant women	15.79	Uterus perforation	18.95				
<i>Episiotomy</i>	Unsure about site of incision	6.32	Unsure about perineal layers when suturing	16.84				
<i>Normal vaginal delivery</i>	Second or third degree tear	28.42	Unsure about determining the position of the fetal head	13.68	Unsure about anatomical landmarks during vaginal examination	9.47		



<i>Procedure</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>
<i>Cesarian section</i>	Unsure about anatomy of the abdominal wall when suturing	7.37	Difficulty to determine the site of uterine incision	9.47	Damage to the ureter	4.21	Difficulty to perform a Pfannenstiel incision	27.37
<i>Sterilization</i>	Bleeding	13.68	Difficulty to locate the uterine tubes	36.84				
<i>Ectopic pregnancy surgery</i>	Bleeding	29.47	Unsure about the anatomy of the abdominal wall when suturing	2.11				
<i>Circumcision</i>	Bleeding	33.68	Difficulty to find the site for incision	5.26				
<i>Excision of external thrombosed hemorrhoids, Injection or ligation of internal hemorrhoids</i>	Difficulty to find and distinguish between hemorrhoids	7.37	Unsure about possible site of incision	17.89				
<i>Appendectomy</i>	Unsure of site of incision	7.37	Bleeding	5.26	Unable to locate appendix	23.16	Damage to cutaneous nerves	3.16
<i>Tonsillectomy and adenoidectomy</i>	Bleeding	27.37	Unable to remove tonsil in fascial plane	8.42	Nerve damage	0	Unsure about the location of the adenoids	3.16
<i>Wrist block and digital nerve block</i>	Unable to locate nerves in relation to the wrist	15.79	Unable to locate nerves in relation to the digits	14.74				
<i>Pudendal nerve block</i>	Unsure about anatomical landmarks to find the nerve	20						
<i>Brachial plexus block</i>	Pneumothorax	3.16	Phrenic nerve paralysis	3.16	Unsure about site of entrance and direction of the needle	16.84		



<i>Procedure</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>
<i>Injection of shoulder joint</i>	Unsure of site of entrance and direction of needle	20						
<i>Colposcopy</i>	Unsure about anatomical landmarks	9.47						
<i>Paronychia incision and drainage</i>	Unsure about site of incision	18.95	Unable to locate root of the nail	5.26				
<i>Upper gastrointestinal endoscopy</i>	Unsure about anatomical landmarks of the mucosal anatomy	8.42						
<i>Knee joint aspiration</i>	Unable to locate the site of entry	13.68	Damage to cutaneous nerves of the knee joint	2.11	Damage to the articular cartilage	9.47		
<i>Liver biopsy</i>	Unsure about site of entrance	15.79	Bleeding	8.42	Pneumo-thorax	0	Pneumo-peritoneum	0
<i>Indirect laryngoscopy</i>	Unsure about anatomical landmarks in the larynx	10.53						
<i>Epistaxis and nasal packing</i>	Unable to control bleeding	47.37						
<i>Bone marrow aspiration</i>	Unsure about site of entry	20						
<i>Aspiration of pleural effusion</i>	Unsure about site of needle entrance	14.74						
<i>Reduction of shoulder dislocation</i>	Unsure about technique and its rationale	21.05	Brachial plexus injury	7.37				
<i>Reduction of elbow dislocation</i>	Brachial artery injury	2.11	Median nerve injury	2.11	Unsure about the technique and its rationale	16.84		
<i>Reduction of interphalangeal joint dislocation</i>	Collateral ligament injury	8.42	Unsure about technique and its rationale	10.53				



<i>Procedure</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>
<i>Reduction of hip dislocation</i>	Unsure about technique and its rationale	17.89						
<i>Nasopharyngoscopy</i>	Unsure about the anatomy of the nasopharynx	12.63						
<i>Slit lamp examination</i>	Unsure about anatomy of structures in the eye	13.68						
<i>Rectal examination</i>	Unable to locate the prostate gland	9.47	Unable to locate the seminal vesicles	30.53	Unable to locate the cervix and uterus in a female patient	5.26		
<i>Vaginal examination</i>	Unable to locate the bladder	7.37	Unable to locate the adnexae	5.26	Unable to locate the recto-uterine pouch	6.32	Unable to appreciate the position of the ureters	21.05
<i>Musculoskeletal ultrasound</i>	Unable to locate anatomical structures	12.63						
<i>Abdominal CT scan</i>	Unable to locate abdominal structures	13.68						
<i>Brain CT scan</i>	Unable to locate brain structures	13.68						
<i>Chest X-Ray</i>	Unable to locate the borders the heart	3.16	Unable to count the ribs on the X-ray	4.21	Unable to visualize pulmonary vasculature	18.95		
<i>Abdominal X-Ray</i>	Unable to differentiate small bowel from large bowel	10.53	Unable to visualize soft tissue	7.37	Unable to visualize the psoas line	22.11		
<i>Pelvic X-Ray</i>	Unable to locate bony landmarks	11.58	Unable to evaluate the pelvic brim	7.37				
<i>Neck X-Ray</i>	Unsure about assessment of soft tissue spaces	21.05	Unsure about assessment of bony landmarks	18.95	Unsure about assessment of cartilage	21.05		



<i>Procedure</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>	<i>Complication</i>	<i>%</i>
<i>Obstetric ultrasound</i>	Unable to locate anatomical structures	34.74	Unable to do standard obstetric measurements	16.84				
<i>Abdominal ultrasound</i>	Unable to locate anatomical structures	34.74						

4.1.7 The role of clinical anatomy in reducing difficulties and complications

The following statement was evaluated for every procedure by the general practitioners: “The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications”.

Tables 21-24 illustrate how this statement was rated, regarding emergency procedures (Table 21), surgical procedures (Table 22), office procedures (Table 23) and imaging procedures (Table 24).

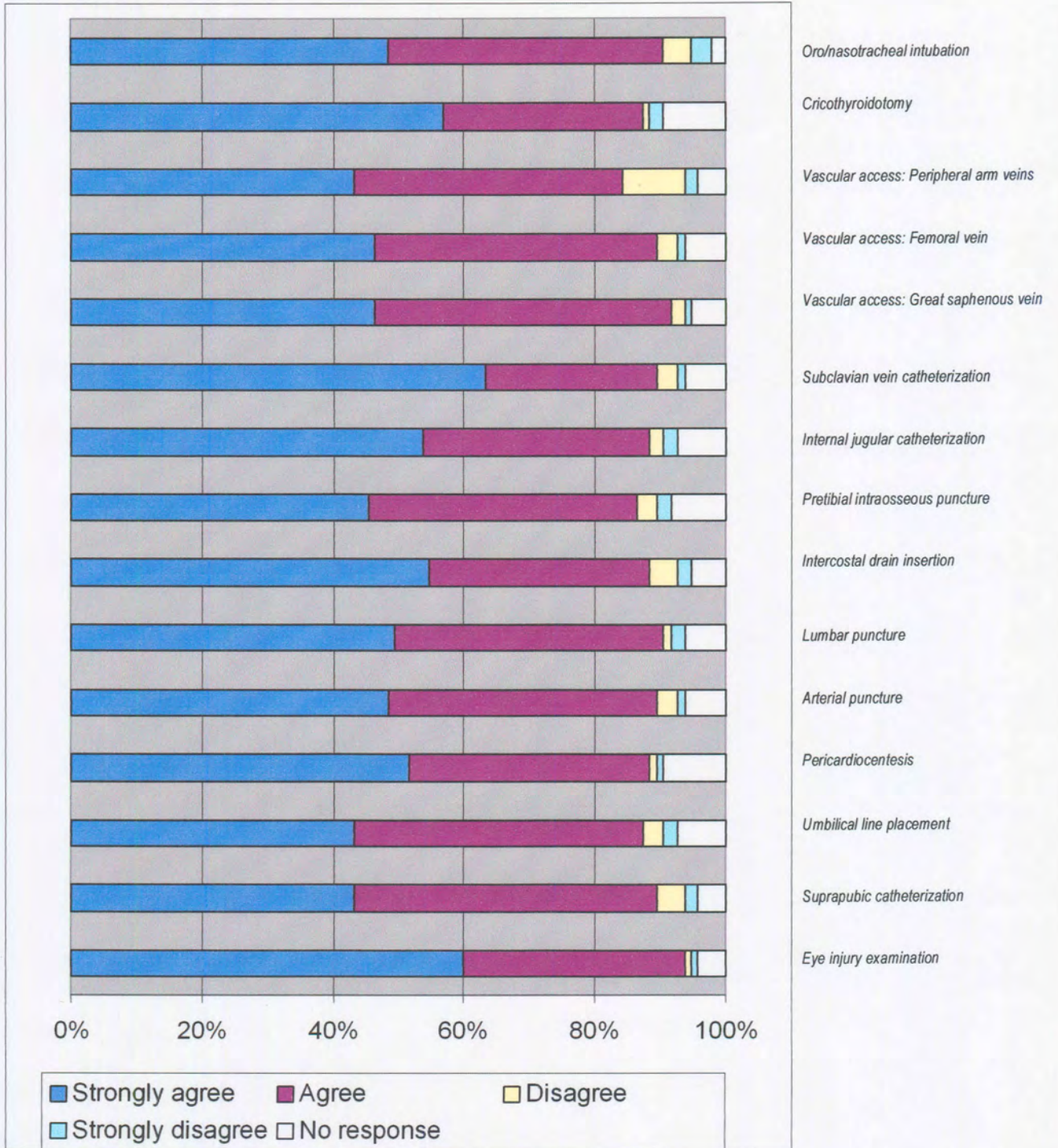


Table 21. Evaluation of statement: “The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications” for emergency procedures.

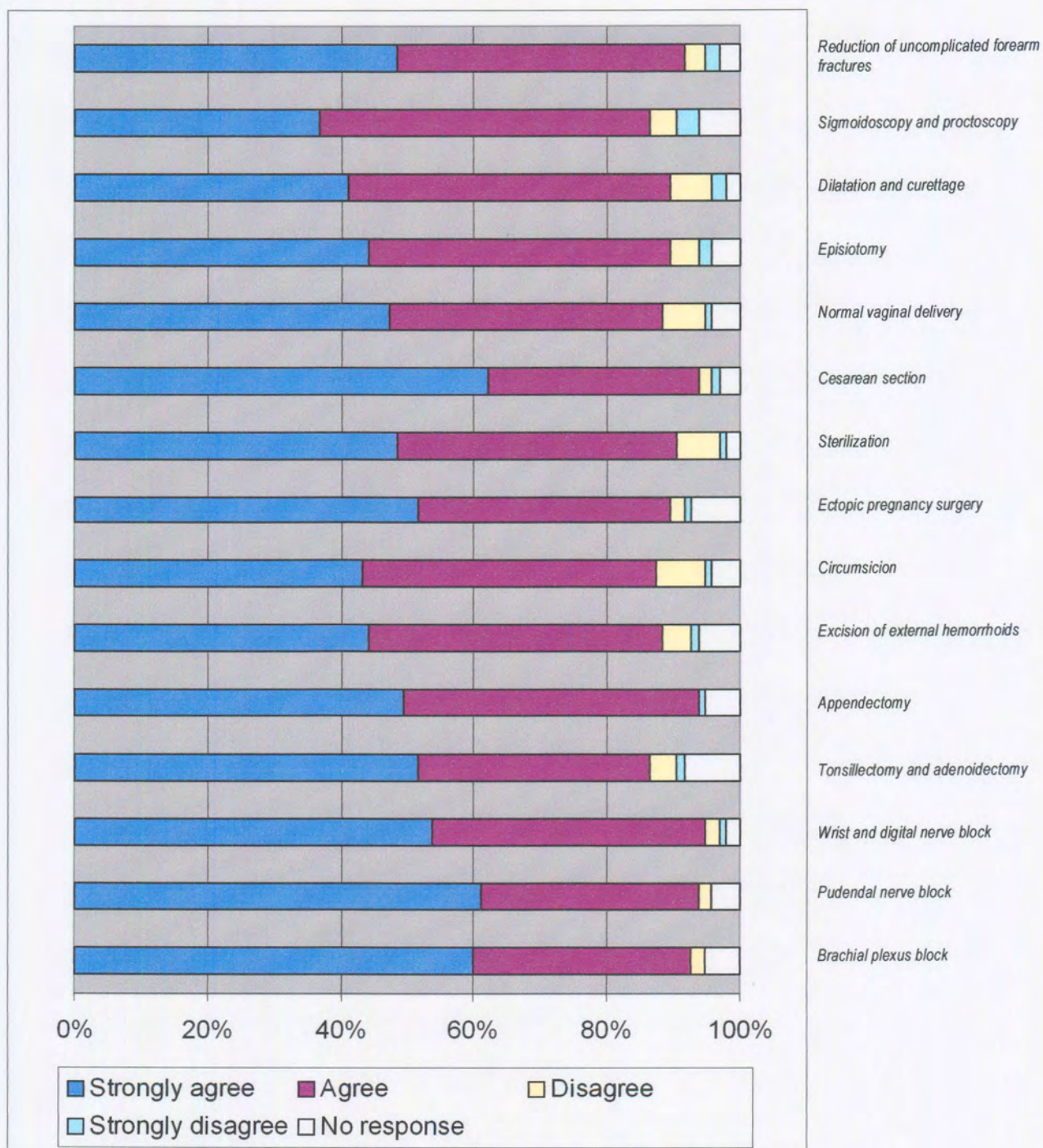


Table 22. Evaluation of statement: “The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications” for surgical procedures.

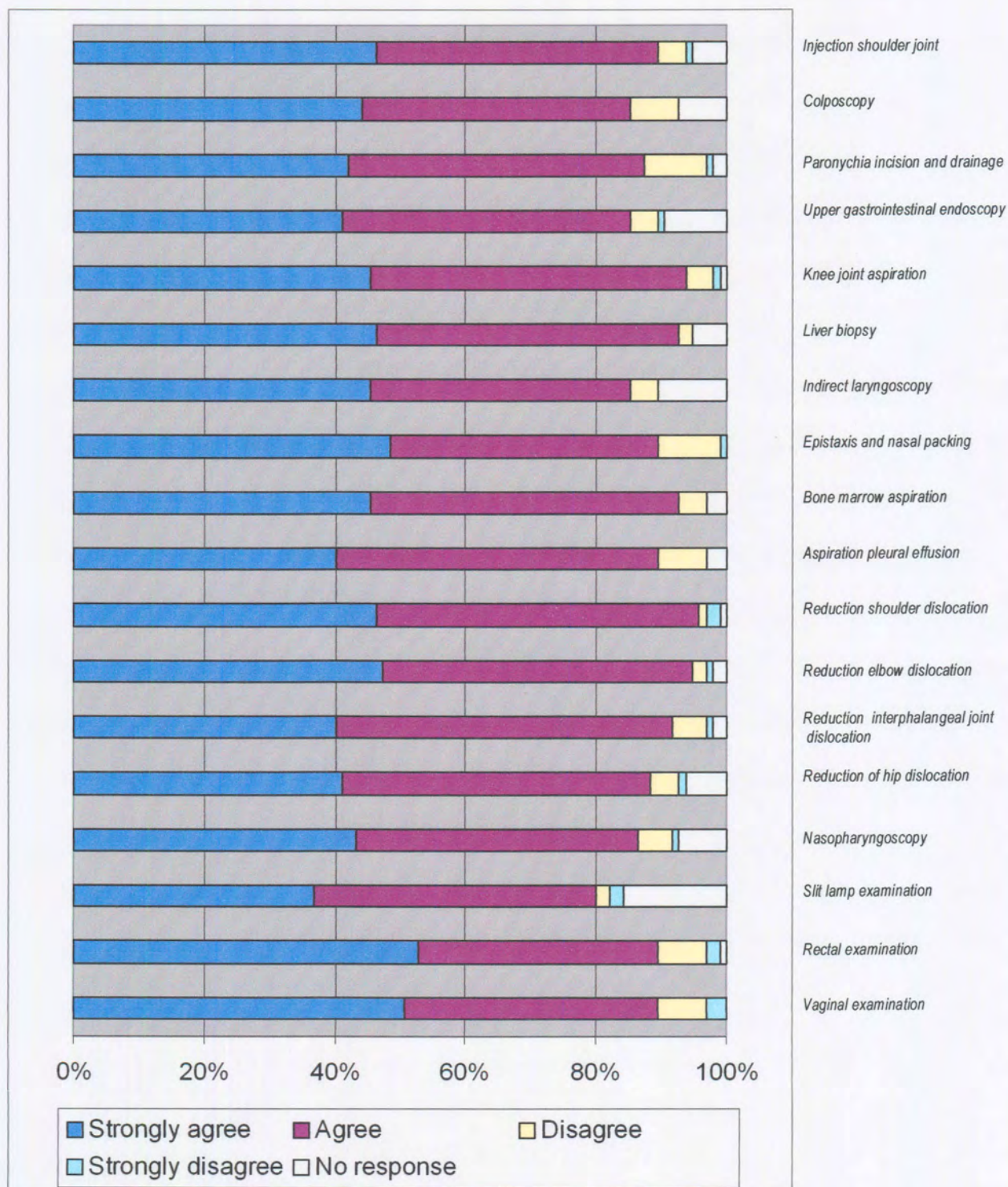


Table 23. Evaluation of statement: “The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications” for office procedures.

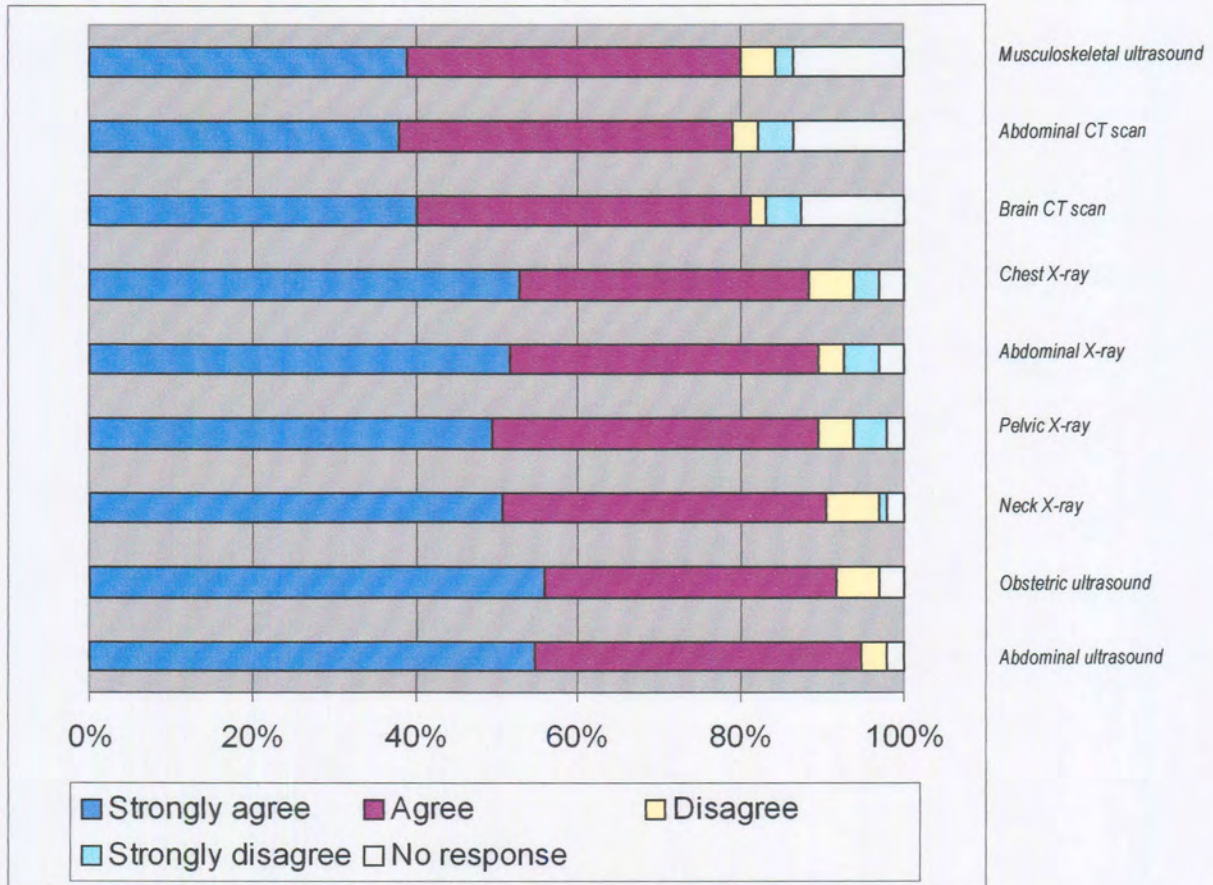


Table 24. Evaluation of statement: “The improvement of critical anatomy knowledge necessary to perform this procedure will reduce difficulties and complications” for imaging procedures.

4.1.8 The role of clinical anatomy to increase the confidence of general practitioners in performing procedures.

The following statement was evaluated for every procedure: “Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure”.

Tables 25-28 illustrate how this statement was rated, regarding emergency procedures (Table 25), surgical procedures (Table 26), office procedures (Table 27) and imaging procedures (Table 28).

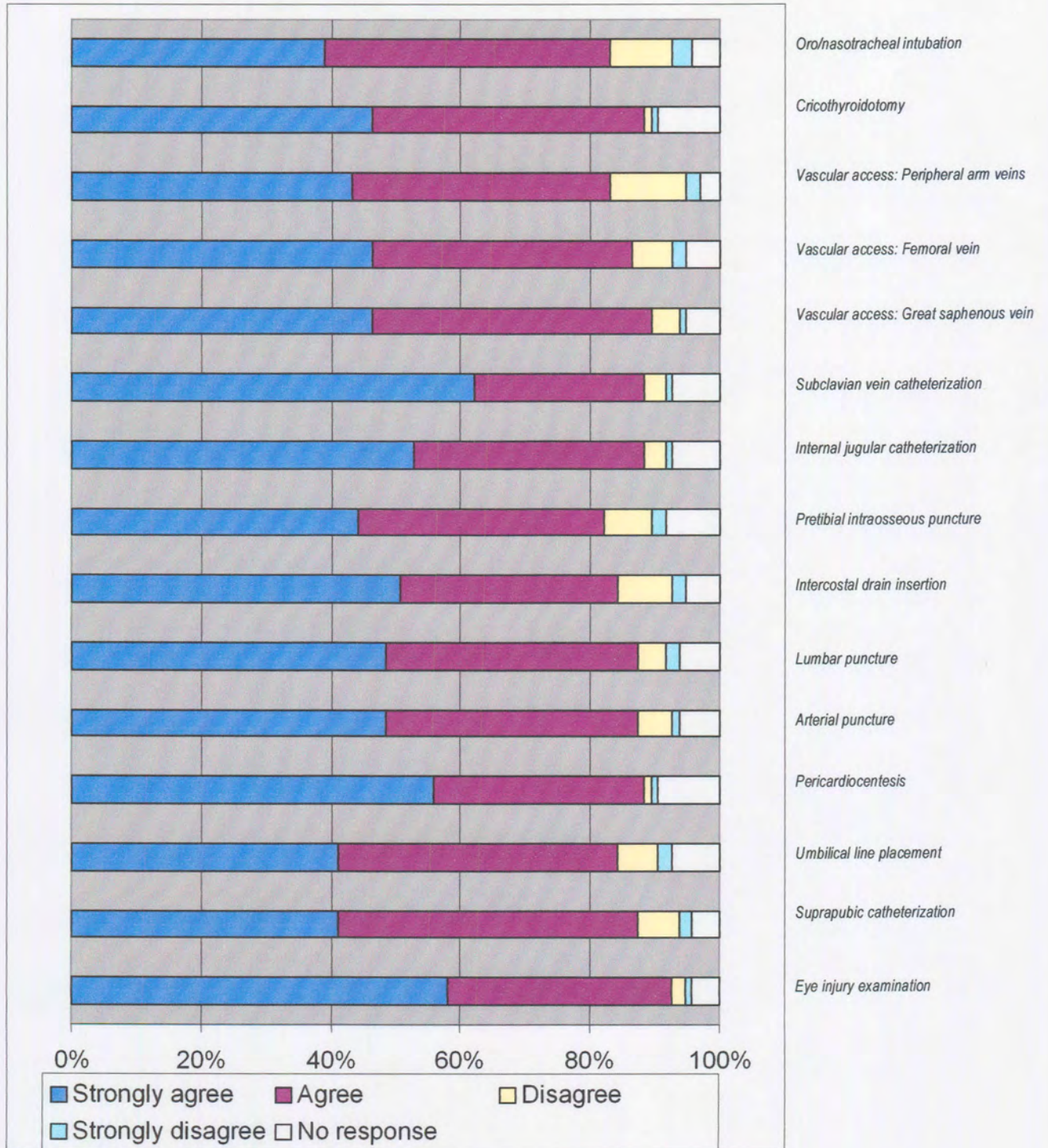


Table 25. Evaluation of statement: “Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure” for emergency procedures.

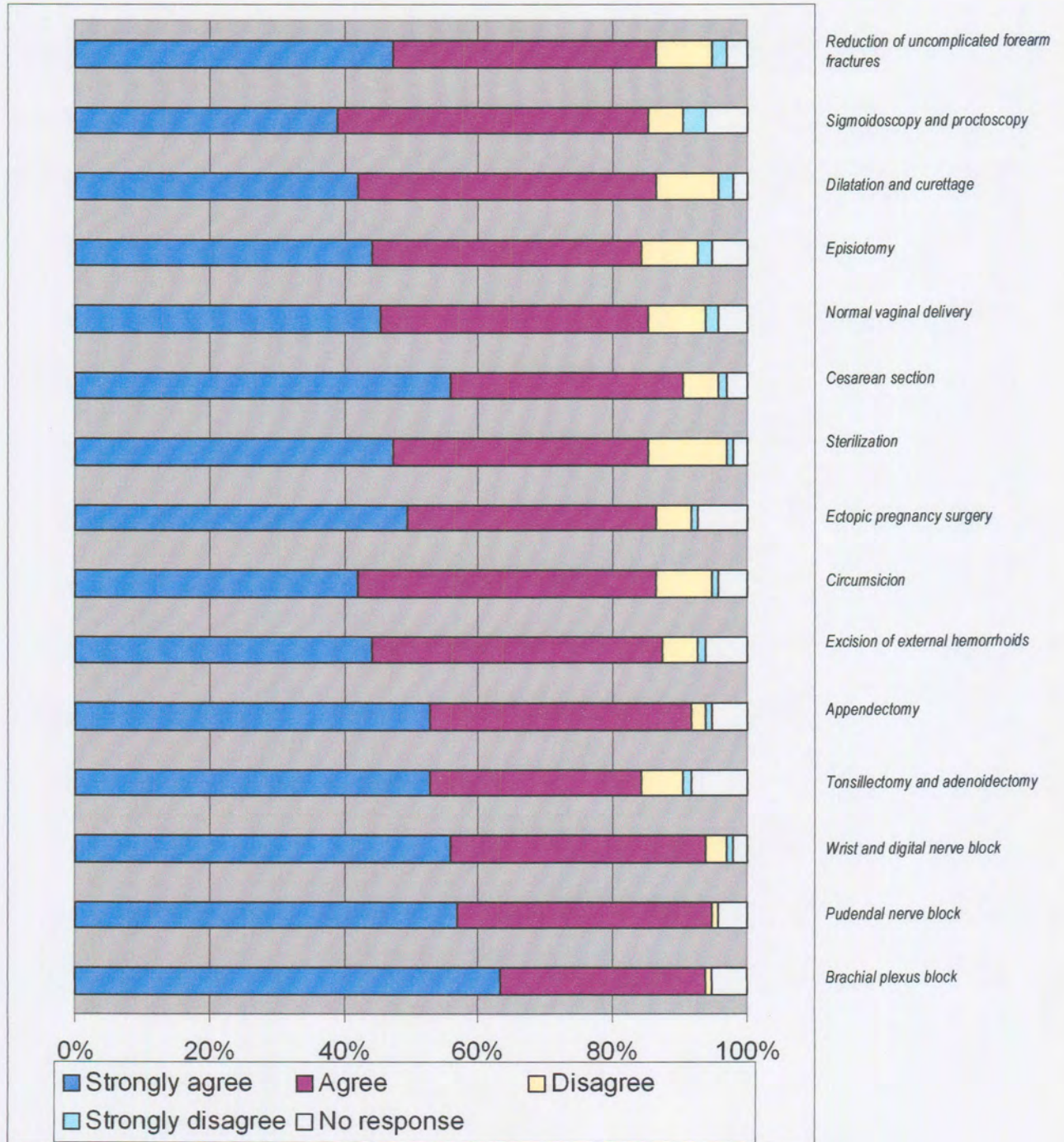


Table 26. Evaluation of statement: "Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure" for surgical procedures.

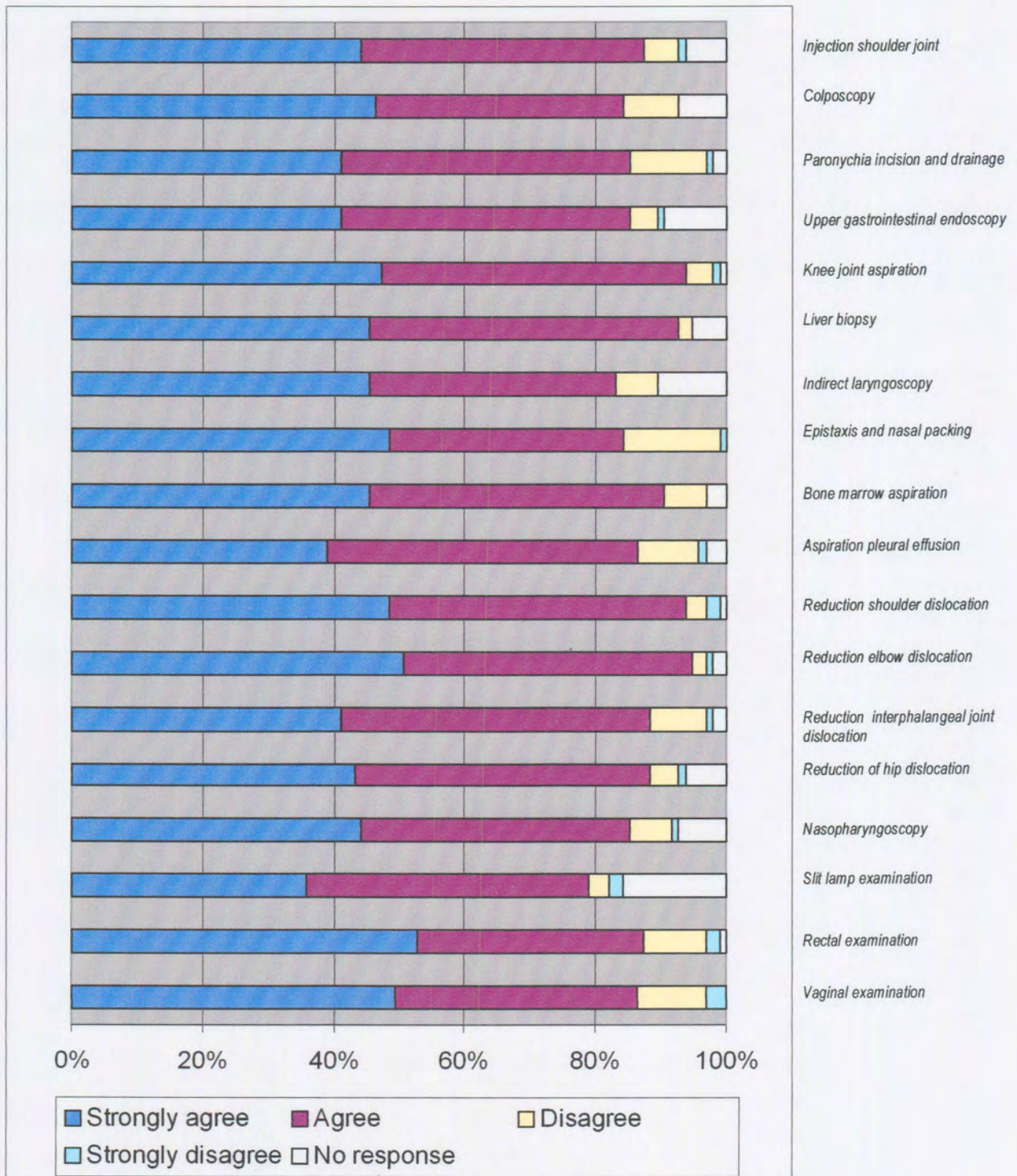


Table 27. Evaluation of statement: "Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure" for office procedures.

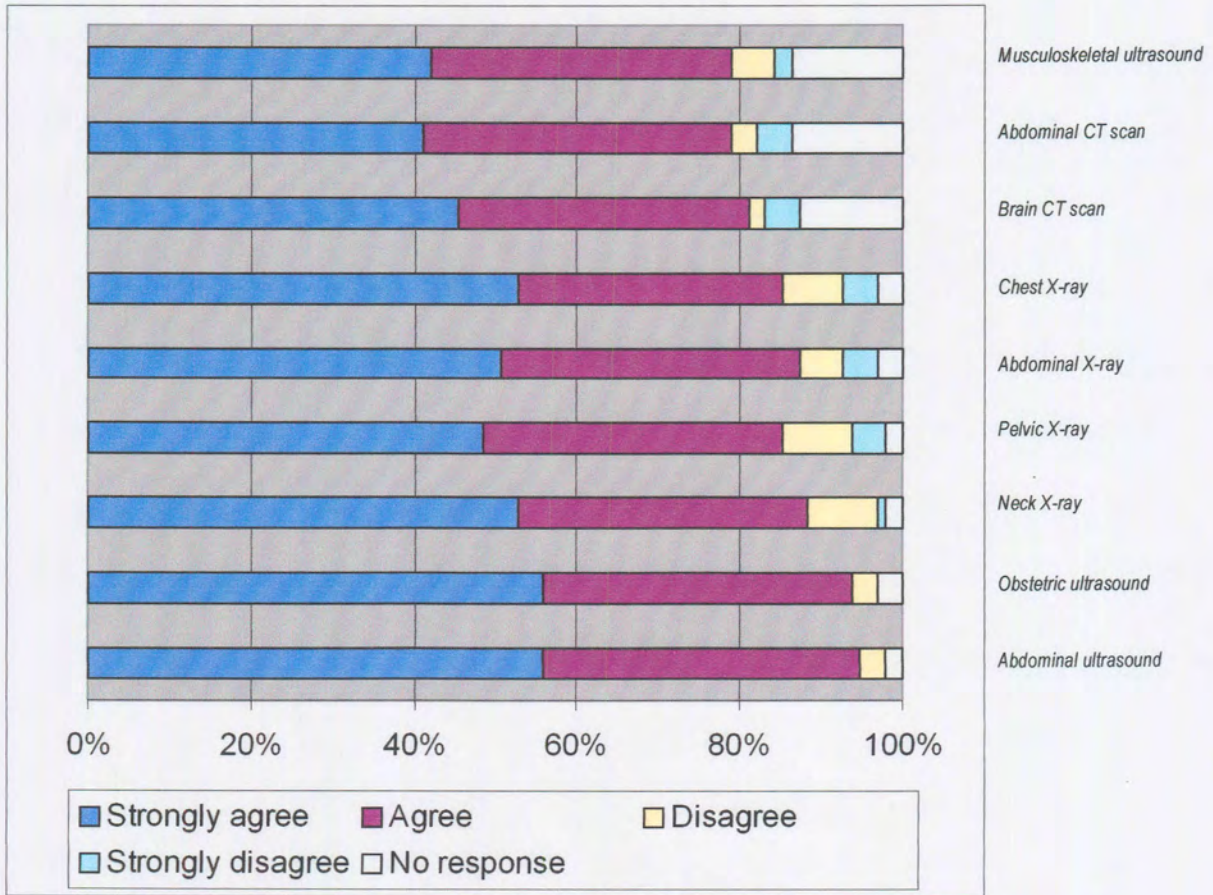


Table 28. Evaluation of statement: "Improvement of anatomy knowledge necessary for the procedure will increase my confidence in performing the procedure" for imaging procedures.

4.2 Selection of problem procedures and criteria for selection

Scoring option C was chosen to resemble best the following aspects that were regarded as the focus of our study:

- The procedure is performed by at least 50% of the general practitioners.
- The procedure is regarded as essential by at least 60% of the general practitioners.
- More doctors are uncomfortable with the procedure than comfortable.
- Difficulties and complications that are anatomically related were met.
- The assessment of the influence of clinical anatomy knowledge relevant to the procedure was to reduce difficulties and complications and increase confidence of performance.

Scoring system for scoring option C

1. Incidence of performance (>50%)	1 point
2. Essentiality (>60%)	1 point
3. Comfortability (more are uncomfortable than comfortable)	1 point
4. Difficulty or complication related to anatomy experienced by more than 25% of doctors	1 point
5. More than 80% thought that improvement of critical anatomy knowledge necessary to perform the procedure will reduce difficulties and complications.	1 point
6. More than 80% thought that improvement of anatomy knowledge necessary for the procedure will increase confidence in performing the procedure.	1 point

Total:	6 points

Procedures that scored highest in every section (emergency procedures, minor surgery, office procedures and imaging procedures) were subjected to the following to select the number (emergency procedures = 6, minor surgery = 4, office procedures = 4 and imaging procedures = 2) in every category:

Sum of the following categories: Uncomfortable + very uncomfortable + the single highest difficulty or complication.

A proportional number of problem procedures in every category (emergency procedures, surgical procedures, office procedures and imaging procedures) were selected. Table 29 shows the problem procedures that were selected by means of Scoring option C.

<i>Emergency procedures:</i>	<ol style="list-style-type: none">1. Central venous catheterization (Subclavian vein and internal jugular vein catheterization)2. Cricothyroidotomy3. Pericardiocentesis4. Vascular access: Great saphenous vein5. Oro/nasotracheal intubation6. Lumbar puncture
<i>Surgical procedures</i>	<ol style="list-style-type: none">1. Appendectomy2. Caesarian Section3. Reduction of uncomplicated forearm fractures4. Ectopic pregnancy surgery
<i>Office procedures</i>	<ol style="list-style-type: none">1. Epistaxis and nasal packing2. Rectal examination, proctoscopy and sigmoidoscopy3. Knee joint aspiration4. Wrist block and digital nerve block
<i>Imaging procedures</i>	<ol style="list-style-type: none">1. Obstetric ultrasound

Table 29. List of selected problem procedures by means of Scoring option C.

4.3 Comparison between urban and rural practices

A total of 44 questionnaires from practitioners from urban hospital practices and 53 from rural practices were obtained and compared.

Table 30 represents the comparison between urban and rural hospital practices regarding *only the 15 selected problem procedures*. The p-value is provided as well and statistical significance is highlighted.

Table 30. Comparison between urban and rural hospital practices regarding the 15 selected problem procedures.

Procedure		Significance	
		(-) no significant difference (+) significant difference	
		<i>p- value</i>	
Oro/nasotracheal intubation	<i>Incidence</i>	0.378	-
	<i>Frequency</i>	0.015	+ Doctors in rural areas perform more often
	<i>Essentiality</i>	0.750	-
	<i>Comfortability</i>	0.064	-
	<i>Difficulties</i>	0.778	-
	<i>Complications</i>	0.287	-
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.001	+ Rural doctors regard the influence as more important
	<i>Influence of clinical anatomy to increase confidence</i>	0.0236	+ Rural doctors regard the influence as more important
Cricothyroidotomy	<i>Incidence</i>	0.026	+More urban doctors perform this procedure
	<i>Frequency</i>	0.0001	+ Doctors in urban areas perform more often
	<i>Essentiality</i>	0.908	-
	<i>Comfortability</i>	0.052	-
	<i>Difficulties</i>	0.003	+ Urban doctors have more difficulties
	<i>Complications</i>	0.439	-
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.053	-
	<i>Influence of clinical anatomy to increase confidence</i>	0.068	-

Procedure		Significance	
		(-) no significant difference (+) significant difference	
		<i>p- value</i>	
Great saphenous vein cannulation	<i>Incidence</i>	0.511	-
	<i>Frequency</i>	0.044	+Urban doctors perform more often
	<i>Essentiality</i>	0.347	-
	<i>Comfortability</i>	0.183	-
	<i>Difficulties</i>	0.212	-
	<i>Complications</i>	0.489	-
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.006	+ Rural doctors regard the influence as more important
	<i>Influence of clinical anatomy to increase confidence</i>	0.003	+ Rural doctors regard the influence as more important
	Lumbar puncture	<i>Incidence</i>	0.0002
<i>Frequency</i>		0.304	-
<i>Essentiality</i>		0.0001	+More rural doctors regard the procedure as essential
<i>Comfortability</i>		0.265	-
<i>Difficulties</i>		0.873	-
<i>Complications</i>		0.732	-
<i>Influence of clinical anatomy on reducing difficulties and complications</i>		0.010	+ Rural doctors regard the influence as more important
<i>Influence of clinical anatomy to increase confidence</i>		0.052	-
Pericardiocentesis		<i>Incidence</i>	0.367
	<i>Frequency</i>	0.028	+ Doctors in urban areas perform more often
	<i>Essentiality</i>	0.098	-
	<i>Comfortability</i>	0.201	-
	<i>Difficulties</i>	0.632	-
	<i>Complications</i>	0.074	-
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.012	+ Rural doctors regard the influence as more important
	<i>Influence of clinical anatomy to increase confidence</i>	0.027	+ Rural doctors regard the influence as more important

Procedure		Significance	
		(-) no significant difference	(+) significant difference
		<i>p- value</i>	
Subclavian vein catheterization	<i>Incidence</i>	0.0002	+More urban doctors perform this procedure
	<i>Frequency</i>	0.0002	+ Doctors in urban areas perform more often
	<i>Essentiality</i>	0.684	-
	<i>Comfortability</i>	0.0005	+Rural doctors are more uncomfortable
	<i>Difficulties</i>	0.004	+Urban doctors have more difficulties
	<i>Complications</i>	0.0008	+Urban doctors experience more complications
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.0066	+ Rural doctors regard the influence as more important
	<i>Influence of clinical anatomy to increase confidence</i>	0.005	+ Rural doctors regard the influence as more important
Internal jugular vein catheterization	<i>Incidence</i>	0.082	-
	<i>Frequency</i>	0.004	+Doctors in urban areas perform more often
	<i>Essentiality</i>	0.0008	+More rural doctors regard the procedure as essential
	<i>Comfortability</i>	0.002	+Urban doctors are more uncomfortable
	<i>Difficulties</i>	0.0001	+Urban doctors have more difficulties
	<i>Complications</i>	0.0009	+Urban doctors experience more complications
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.079	-
	<i>Influence of clinical anatomy to increase confidence</i>	0.035	+ Rural doctors regard the influence as more important
Cesarian section	<i>Incidence</i>	0.0001	+More rural doctors perform this procedure
	<i>Frequency</i>	0.108	-
	<i>Essentiality</i>	0.0001	+More rural doctors regard the procedure as essential
	<i>Comfortability</i>	0.935	-
	<i>Difficulties</i>	0.804	-

Procedure	Significance		
	(-) no significant difference (+) significant difference		
	<i>p- value</i>		
Reduction of uncomplicated forearm fractures	<i>Complications</i>	0.0009	+Rural doctors experience more complications
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.445	-
	<i>Influence of clinical anatomy to increase confidence</i>	0.214	-
	<i>Incidence</i>	0.0001	+More rural doctors perform this procedure
	<i>Frequency</i>	0.673	-
	<i>Essentiality</i>	0.0001	+More rural doctors regard the procedure as essential
	<i>Comfortability</i>	0.259	-
	<i>Difficulties</i>	0.785	-
	<i>Complications</i>	0.045	+Rural doctors experience more complications
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.022	+ Rural doctors regard the influence as more important
Ectopic pregnancy surgery	<i>Influence of clinical anatomy to increase confidence</i>	0.056	-
	<i>Incidence</i>	0.0002	+More rural doctors perform this procedure
	<i>Frequency</i>	0.034	+Doctors in rural areas perform more often
	<i>Essentiality</i>	0.0001	+More rural doctors regard the procedure as essential
	<i>Comfortability</i>	0.699	-
	<i>Difficulties</i>	0.970	-
	<i>Complications</i>	0.054	-
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.196	-
	<i>Influence of clinical anatomy to increase confidence</i>	0.258	-
	Appendectomy	<i>Incidence</i>	0.855
<i>Frequency</i>		0.904	-
<i>Essentiality</i>		0.0001	+More rural doctors regard the procedure as essential

Procedure		Significance	
		(-) no significant difference (+) significant difference	
		<i>p- value</i>	
Appendectomy (continued)	<i>Comfortability</i>	0.219	-
	<i>Difficulties</i>	0.162	-
	<i>Influence of clinical anatomy to increase confidence</i>	0.210	-
Wrist and digital nerve block	<i>Incidence</i>	0.936	-
	<i>Frequency</i>	0.772	-
	<i>Essentiality</i>	0.021	+More rural doctors regard the procedure as essential
	<i>Comfortability</i>	0.387	-
	<i>Difficulties</i>	0.485	-
	<i>Complications</i>	0.736	-
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.222	-
Knee joint aspiration	<i>Influence of clinical anatomy to increase confidence</i>	0.470	-
	<i>Incidence</i>	0.006	+More rural doctors perform this procedure
	<i>Frequency</i>	0.982	-
	<i>Essentiality</i>	0.0001	+More rural doctors regard the procedure as essential
	<i>Comfortability</i>	0.375	-
	<i>Difficulties</i>	0.051	-
	<i>Complications</i>	0.390	-
Epistaxis and nasal packing	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.023	+ Rural doctors regard the influence as more important
	<i>Influence of clinical anatomy to increase confidence</i>	0.187	-
	<i>Incidence</i>	0.938	-
	<i>Frequency</i>	0.951	-
	<i>Essentiality</i>	0.294	-
	<i>Comfortability</i>	0.805	-
	<i>Difficulties</i>	0.146	-
	<i>Complications</i>	0.146	-

Procedure		Significance	
		(-) no significant difference	
		(+) significant difference	
		p- value	
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.190	-
	<i>Influence of clinical anatomy to increase confidence</i>	0.163	-
Rectal examination	<i>Incidence</i>	0.796	-
	<i>Frequency</i>	0.573	-
	<i>Essentiality</i>	0.560	-
	<i>Comfortability</i>	0.181	-
	<i>Difficulties</i>	0.794	-
	<i>Complications</i>	0.741	-
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.013	+ Rural doctors regard the influence as more important
	<i>Influence of clinical anatomy to increase confidence</i>	0.027	+ Rural doctors regard the influence as more important
Obstetric ultrasound	<i>Incidence</i>	0.281	-
	<i>Frequency</i>	0.666	-
	<i>Essentiality</i>	0.0003	-
	<i>Comfortability</i>	0.242	-
	<i>Difficulties</i>	0.298	-
	<i>Complications</i>	0.849	-
	<i>Influence of clinical anatomy on reducing difficulties and complications</i>	0.055	-
	<i>Influence of clinical anatomy to increase confidence</i>	0.305	-