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MAIN ARTICLE

Survey of otolaryngology services in Ukraine and neighbouring Central and Eastern European countries

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Abstract

Objective: The present humanitarian crisis in Ukraine is putting strains on its healthcare system. This study aimed to assess services and training in otolaryngology, audiology and speech therapy in Ukraine and its geographical neighbours.

Method: Survey study of 327 otolaryngologists from 19 countries.

Results: Fifty-six otolaryngologists (17 per cent) from 15 countries responded. Numbers of otolaryngologists varied from 3.6 to 12.3 per 100 000 population (Ukraine = 7.8). Numbers of audiologists varied from 0, in Ukraine, to 2.8 per 100 000, in Slovakia, and numbers of speech therapists varied from 0, in Bulgaria, to 4.0 per 100 000, in Slovenia (Ukraine = 0.1). Ukraine lacks newborn and school hearing screening, good availability of otological drills and microscopes, and a cochlear implant programme.

Conclusion: There is wide variation in otolaryngology services in Central and Eastern Europe. All countries surveyed had more otolaryngologists per capita than the UK, but availability of audiology and speech and language therapy is poor. Further research on otolaryngology health outcomes in the region will guide service improvement.

Key words: Otolaryngology; Audiology; Speech Therapy; Eastern Europe; Ukraine

Introduction

Both the World Health Organization (WHO) and the World Bank have reported recently on the health crisis affecting Ukraine, which has been compounded by the current conflict in the east of the country.[1,2] The WHO classifies the health needs in Ukraine as meeting criteria for a grade 2 emergency, with Ukraine being the only European country to be listed as suffering from a humanitarian health crisis.[1] A prime example is life expectancy, which is 10 years shorter in Ukraine than in the UK.[1] The World Bank highlights poor health awareness, high tobacco and alcohol dependency, and failure of existing health services to prevent, detect and treat diseases effectively as causes for this reduced life expectancy.[2] Moreover, despite allegedly free state healthcare provided for all, under-the-table payments by patients to healthcare professionals are commonplace.[3] The World Bank recently launched a US$214 million project targeted at improving cardiovascular health and cancer care.[4]

Epidemiological studies on disabling hearing loss cite that 5–8 per cent of the world's population is afflicted by some form of ear disease, which ranks third globally on the list of non-fatal disabling conditions in developing countries.[5] According to the World Development Report (1993), at least 51 000 children younger than 5 years die annually from complications associated with ear disease.[6]

In prior articles published by two of the authors (RW, JJF), surveys were undertaken in both Africa and Central America to evaluate regional otolaryngology services and training opportunities.[7,8] These surveys found deficits and inequality of delivery of otolaryngology services, and a lack of educational opportunities, in these regions. However, little research has focused on otolaryngology services in Ukraine, despite concerns from international bodies such as the WHO and the World Bank on health provision in this country.

The current survey was conducted to assess the quality and availability of otolaryngology, audiology,

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and speech therapy services and training in Ukraine, where the authors have undergone training and outreach, and neighbouring countries in Central and Eastern Europe.

Study aims

The study aimed to: determine the availability of otolaryngology, audiology and speech therapy services and training opportunities in Central and Eastern Europe; increase awareness of the oto services currently available in Central and Eastern Europe; and provide direction for future research and the development of programmes that will improve otolaryngology care in the region.

Materials and methods

This study met criteria for exemption from approval by the University College London Research Ethics Committee.

Between February and June 2016, electronic surveys were sent to 327 otolaryngologists from 19 Central and Eastern European countries via e-mail addresses provided by the International Federation of Otolaryngology Societies and the European Rhinologic Society. Surveys were also distributed by hand to otolaryngologists during a mission by a non-profit organisation, Global ENT Outreach, to Ukraine in May 2016. Surveys were translated into English, Russian and Ukrainian.

Data were collected and analysed within Google Forms. Numbers of otolaryngologists per country were determined from records held by the International Federation of Otolaryngology Societies, and survey responses were used to compliment these data. Numbers of medical schools were taken from the World Directory of Medical Schools.[9] Otolaryngologists were asked to provide: information on the numbers of otolaryngologists, audiologists and speech therapists in their home countries; details regarding the length and availability of training programmes; and a subjective rating of the availability of services in both the private and state sectors, on a scale from 'none' to 'excellent'. Where respondents disagreed on availability ratings, the modal response was used.

Results

We received 56 responses from 15 Central and Eastern European countries (Figure 1, Table I), with previously published UK data as a reference.[8] The overall response rate was 17 per cent. There were no responses from Azerbaijan, Hungary, Moldova or Uzbekistan.

Figure 2 shows the numbers of fully trained otolaryngologists, audiologists and speech therapists per country, with the exception of Georgia, where this information was not available. Of the countries surveyed, Estonia had the highest ratio of ENT surgeons to population (12.3 per 100 000), with Romania reporting the lowest ratio (3.6 per 100 000). All countries surveyed had a higher ratio of ENT surgeons per capita than the UK. In contrast, the numbers of audiologists and speech therapists reported were consistently lower than the UK. Several countries reported no fully trained audiologists (e.g. Bulgaria, Lithuania, Ukraine), with the highest ratio of audiologists to population reported in Poland (2.1 per 100 000) and Slovakia (2.8 audiologists per 100 000). Reported numbers of speech and language therapists varied from 0 in Bulgaria, to 3.0 per 100 000 in Slovakia and Latvia, and 4.0 per 100 000 in Slovenia.

Table II summarises the opportunities for training and lengths of training programmes in otolaryngology. All countries had formal otolaryngology training programmes at some, if not all, medical schools. Lengths of higher training in otolaryngology varied from one year (Belarus) to five years (Croatia, Poland), compared to six years in the UK. Most countries reported training programmes for audiology and speech and language therapy.

FIG. 1
Fifteen Central and Eastern European countries that responded to the e-mail questionnaire. Map adapted from www.freemaps.no

TABLE I
NUMBERS OF SURVEY RESPONDENTS PER COUNTRY

Country	Respondents (*n*)*
Armenia	3
Belarus	1
Bulgaria	5
Croatia	6
Estonia	3
Georgia	1
Latvia	2
Lithuania	3
Poland	1
Romania	9
Serbia	4
Slovakia	2
Slovenia	1
Ukraine	12
Russia	3
UK	N/A

*Total $n = 56$

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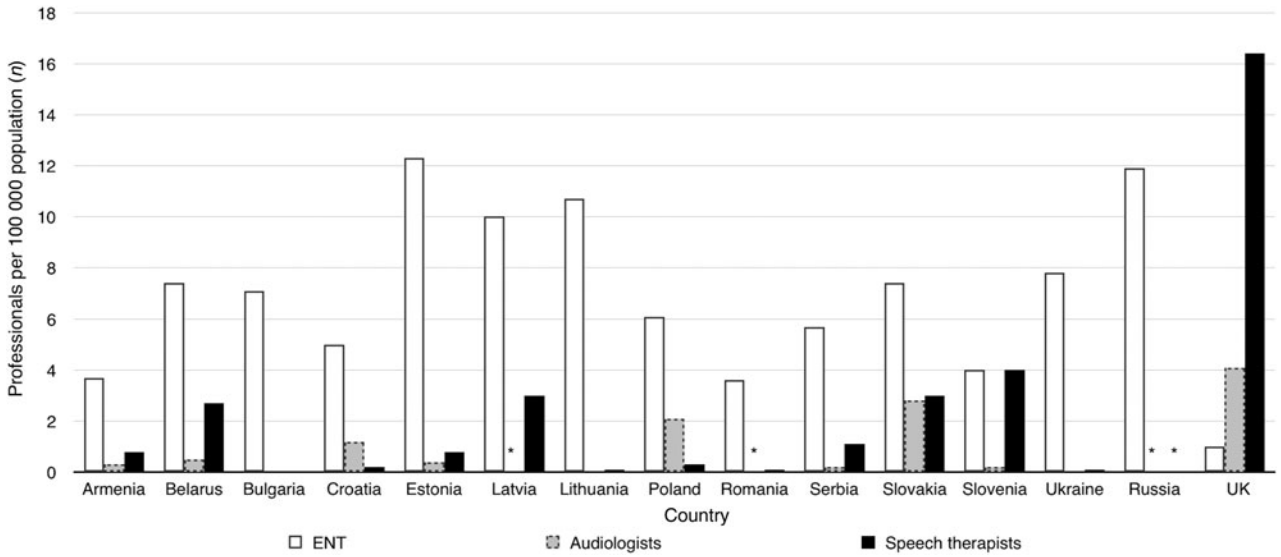

FIG. 2

Summary of numbers of ENT surgeons, audiologists and speech therapists. No data on these parameters were available from Georgia. *No data reported

All countries reported publicly accessible state hospitals providing ENT care, apart from Latvia. Table III shows the availability of services in state hospitals. The majority of countries surveyed reported 'good' or 'excellent' availability of all state otolaryngology services included in our questionnaire. However, 6 out of 15 countries (40 per cent) reported 'poor' or 'very poor' availability of audiology services. Availability of school hearing screening was rated as 'poor' in 9 out of 15 countries (60 per cent), and availability of bone-anchored hearing aid surgery was reported as 'very poor' in 6 out of 15 countries surveyed (40 per cent). Poland was the only country that reported a 'good' state hearing screening programme for school-age children. Ukraine reported no newborn or school hearing screening and no cochlear implant programme. Hearing aids are very poorly available in state health services in Ukraine, and only poorly available in Belarus, Latvia, Lithuania, Romania and Russia. Tympanoplasty, ossicular reconstruction and mastoidectomy were reported as not available in the state sector in Georgia.

Table IV shows the availability of private otolaryngology services. Seven of the 15 countries (47 per cent) reported 'poor' or 'very poor' availability of audiology services, with Slovenia reporting no private audiology services. A minority of countries with 'very poor' or 'poor' availability of state otolaryngology services reported 'good' or 'excellent' availability of private services (Georgia, Bulgaria). The majority of

TABLE II
OPPORTUNITIES FOR TRAINING AND LENGTH OF TRAINING PROGRAMMES

Country	Medical schools		Otolaryngology		Audiology	Speech therapy
	Total (*n*)	Number with otolaryngology training	Length of training (years)	Residents qualifying per annum (*n*)	Training programme?	Training programme?
Armenia	4	1	3	20	Y	Y
Belarus	4	4	1	20	Y	Y
Bulgaria	6	5	4	10	N	N
Croatia	5	4	5	5	Y	Y
Estonia	1	1	3	1–2	Y	Y
Georgia	20	10	4	No data	Y	N
Latvia	2	2	4	2–3	Y	Y
Lithuania	2	2	3	10	N	Y
Poland	16	16	5	60	Y	Y
Romania	13	12	4	18–60	Y	Y
Serbia	5	4	4	10–50	Y	Y
Slovakia	4	4	5	10–15	Y	Y
Slovenia	2	2	5	1–3	Y	Y
Ukraine	21	16	2	100–200	N	Y
Russia	76	76	2	200	N	Y
UK	34	34	6	30–60	Y	Y

Y = yes; N = no

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TABLE III
SERVICES AVAILABLE IN STATE HOSPITALS

Services	State services									
	None		Very poor		Poor		Good		Excellent	
	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)
Audiology services		–	G	1	A, By, Lv, Ro, U	5	Bg, C, E, Lt, P, Sr, Sk, Si, Ru	9		–
ABR		–	By	1	A, Bg, C, G, Ro, U	6	E, Lv, Lt, P, Sr, Sk, Si, Ru	8		–
Newborn hearing screening	U	1		–	By, Bg, Ro, Sr	4	A, C, G, Lv, Lt, Sk, P, Si, Ru	9	E	1
School hearing screening	By, Ro, U	3	Bg, G	2	A, C, E, Lv, Lt, Sr, Sk, Si, Ru	9	P	1		–
Myringotomy + grommet		–	G	1	A, By, P, Ro, U	5	Bg, C, Lt, Sr, Sk, Si, Ru	7	E, Lv	2
Tympanoplasty	G	1		–	By, Bg, Ro, U	4	A, C, E, Lv, Lt, P, Sr, Sk, Si, Ru	10		–
Ossicular chain reconstruction	G	1	Ro, U	2	By, Bg, Lv	3	A, C, Lt, P, Sr, Sk, Si, Ru	8	E	1
Mastoidectomy for cholesteatoma	G	1	By	1	Bg, Ro, U	3	A, C, Lt, P, Sr, Sk, Si, Ru	8	E, Lv	2
Conventional hearing aids		–	U	2	By, Lt, Ro, Ru, Lv	4	A, Bg, C, G, P, Sr, Sk, Si	8	E	1
BAHA		–	By, Bg, G, Ro, U, Ru	6		–	A, C, Lt, P, Sr, Sk, Si	7	E, Lv	2
Cochlear implants	U	1		–	Ro	1	A, By, Bg, C, G, Lt, P, Sr, Sk, Si, Ru	11	E, Lv	2
FESS		–	G	1	A, By, Lv	3	Bg, C, Lt, P, Sr, Sk, Si, U, Ru	9	E, Ro	2
Caldwell–Luc		–	G, Sk, P	3		–	A, By, C, E, Lv, Lt, Ro, Sr, Si, U, Ru, Bg	12		–
Rhinoplasty	Ru	1	By, G	2	Lv, Ro	2	A, Bg, C, E, Lt, P, Sr, Sk, Si, U	10		–
Total laryngectomy		–		–	G	1	A, By, C, Lv, Lt, P, Sr, Sk, Si, U, Ru	11	Bg, E, Ro	3
Radical neck dissection		–		–	G	1	A, By, C, Lv, Lt, P, Sr, Sk, Si, U, Ru	11	Bg, E, Ro	3
Free flaps		–	Bg, Sk	2	By, G, Ro, U	4	A, C, Lv, Lt, P, Sr, Si, Ru	8	E	1
Parotidectomy		–		–	Ro, U	2	A, By, C, G, Lv, Lt, P, Sr, Sk, Si, Ru, Bg	12	E	1

ABR = auditory brainstem response; BAHA = bone-anchored hearing aid; FESS = functional endoscopic sinus surgery; A = Armenia; By = Belarus; Bg = Bulgaria; C = Croatia; E = Estonia; G = Georgia; Lv = Latvia; Lt = Lithuania; P = Poland; Ro = Romania; Sr = Serbia; Sk = Slovakia; Si = Slovenia; U = Ukraine; Ru = Russia

TABLE IV
SERVICES AVAILABLE IN PRIVATE SECTOR

Services	Private services									
	None		Very poor		Poor		Good		Excellent	
	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)
Audiology services	Si	1	E	1	By, Bg, C, Lt, Sk, Sr	6	A, Lv, P, Ro, U, Ru	6	G	1
ABR	E, Lt, Si	3	By, Bg, C, Sk	4	G, P, Ro, Sr	4	A, Lv, U, Ru	4		–
Newborn hearing screening	C, E, Lt, Si	4	Sk, U	2	By, Bg, G, P, Ro, Sr	6	A, Lv, Ru	3		–
School hearing screening	By, Bg, C, E, Lt, Sk, Ro, U	8	G, Si	2	A, Lv, P, Sr, Ru	5		–		–
Myringotomy + grommet	Si	1	By	1	P, Sr, U	3	A, Bg, C, G, Lv, Lt, Sk, Ro, Ru	9	E	1
Tympanoplasty	By, Lt, Si	3	E	1	Bg, Sr, Sk, U, Ru	5	A, C, Lv, P	4	G, Ro	2
Ossicular chain reconstruction	By, E, Lt, Si	4	Bg, Ro	2	Sk, Sr, U, Ru	4	A, C, Lv, P	4	G	1
Mastoidectomy for cholesteatoma	By, E, Lt, Si	4	U	1	Bg, P, Sr, Sk, Ru	5	A, C, Lv	3	G, Ro	2
Conventional hearing aids		–		–	By, Sr, Sk	3	A, Bg, C, Lt, Ro, Sr, Si, U, Ru	9	E, G, Lv	3
BAHA	By, Bg, E, Lv, Lt, Sk, Si, Ru	8	Ro	1	A, C, Sr	3	P, U	2	G	1
Cochlear implants	By, E, Lv, Lt, P, Sk, Si, Ru	8	Ro	1	Bg, C, U	3	A, G, P	3		–
FESS	By	1	Si	1	Lv, Lt, Ro, Sr, U	5	A, C, Sk, P, Ru	5	Bg, E, G	3
Caldwell–Luc	By, Lt, Si	3	Bg, C, Sk, P	4	A, E, U	3	Lv, Ro, Sr, Ru	4	G	1
Rhinoplasty		–		–	By, U	2	A, C, E, Lt, P, Sr, Sk, Si, Ru	9	Bg, G, Lv, Ro	4
Total laryngectomy	By, C, E, Lv, Lt, Si	6	Sk, P, Ro, Ru	4	Sr, U	2	A, G	2	Bg	1
Radical neck dissection	By, C, E, Lv, Lt, Si, Ru	7	Sk, P, Ro	3	A, Sr, U	3	G	1	Bg	1
Free flaps	By, E, Lv, Lt, Si	5	C, Sk, P, Ro	4	Bg, Sr, U, Ru	4	A, G	2		–
Parotidectomy	By, E, Lt, Si	4	Ro, U	2	C, P, Sr, Sk, Ru	5	A, G, Lv	3	Bg	1

ABR = auditory brainstem response; BAHA = bone-anchored hearing aid; FESS = functional endoscopic sinus surgery; A = Armenia; By = Belarus; Bg = Bulgaria; C = Croatia; E = Estonia; G = Georgia; Lv = Latvia; Lt = Lithuania; P = Poland; Ro = Romania; Sr = Serbia; Sk = Slovakia; Si = Slovenia; U = Ukraine; Ru = Russia

countries surveyed reported a poorer availability of otolaryngology services in the private sector when compared with state hospitals.

Tables V and VI summarise the availability of equipment related to otolaryngology practice in state and private health services respectively. The majority of countries surveyed had 'good' availability of otolaryngology equipment in state hospitals. Flexible nasopharyngoscopes are not available in state hospitals in Ukraine, and there is 'very poor' availability of otology drills and operating microscopes in that country. In Belarus, the availability of most of the listed equipment was 'none' to 'very poor' across both private and state hospitals.

TABLE V
AVAILABILITY OF EQUIPMENT RELATED TO OTOLARYNGOLOGY PRACTICE IN STATE HOSPITALS

Equipment	State services									
	None		Very poor		Poor		Good		Excellent	
	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)
Flexible nasopharyngoscope	U	1	A, By, Bg, Lv	4	Sk, Ro	2	C, E, G, Lt, P, Si, Sr, Ru	8	–	–
Operating microscope	A	1	By, U	2	Lv, Sk, Ro	3	Bg, C, G, Lt, P, Si, Sr, Ru	8	E	1
Otological drill	A	1	By, U	2	Bg, Lv, Ro	3	C, E, G, Lt, P, Sk, Si, Sr, Ru	9	–	–
CO_2 laser	A, G, U	3	By, Bg, Sk	3	C, E, Lv, Ro, Ru	5	Lt, P, Si, Sr	4	–	–
CT scanner		–		–	By, Sk, U	3	A, Bg, C, G, Lv, Lt, P, Ro, Si, Sr, Ru	11	E	1
MRI scanner		–	By	1	Bg, Sk, Ro, U	4	A, C, G, Lv, Lt, P, Si, Sr, Ru	9	E	1
PET scanner	A, By, G, Lv	4	Bg, U	2	C, Sk, Ro	3	Lt, P, Si, Sr, Ru	5	E	1
Neck ultrasound		–	By, Bg	2	Lv, Ro	2	A, C, E, G, Lt, P, Sk, Si, Sr, U, Ru	11	–	–
Fine needle aspiration cytology		–	By, Sk, Ro	3	Bg, Lv, U	3	A, C, E, G, Lt, P, Si, Sr, Ru	9		–
Frozen section histology		–	By, Bg, U	3	Lv, Sk, Ro	3	A, C, G, Lt, P, Si, Sr, Ru	8	E	1
Radiotherapy	G	1	A, U	2	Sk, Sr, Ro	3	By, Bg, C, Lv, Lt, P, Si, Ru	8	E	1

CO_2 = carbon dioxide; CT = computed tomography; MRI = magnetic resonance imaging; PET = positron emission tomography; A = Armenia; By = Belarus; Bg = Bulgaria; C = Croatia; E = Estonia; G = Georgia; Lv = Latvia; Lt = Lithuania; P = Poland; Ro = Romania; Sr = Serbia; Sk = Slovakia; Si = Slovenia; U = Ukraine; Ru = Russia

Discussion

The first and second authors, who are ENT surgeons from the USA and UK conducting outreach work in Ukraine under the umbrella of the non-profit organisation Global ENT Outreach, found their experience in Ukraine quite different from that in other regions of the world. We therefore undertook this project to better understand the medical culture and medical environment of Ukraine, and to see how it compares with its neighbours in terms of resources and educational opportunities.

- **Ukraine is the only European country classified as suffering from a humanitarian health crisis by the World Health Organization**
- **Conflict in East Ukraine and political instability has exacerbated an already strained healthcare system**
- **Life expectancy is 10 years lower than UK, with high tobacco and alcohol abuse, and poor primary and secondary care**
- **Despite more ENT doctors, Ukraine is lacking in: hearing screening, otological microscopes and drills, and cochlear implants**
- **Shorter ENT training in Ukraine compared to neighbouring countries may contribute to limited surgical experience**
- **Audiology and speech therapy is poorly available in Ukraine**

All the countries surveyed had at least 5 times as many practising otolaryngologists compared to the UK, with Estonia topping the chart with 12.3 per 100 000 population. However, the data show there to be widespread poor availability of audiology and speech and language therapy services in Ukraine and in several other Central and Eastern European countries.

Although specialty training in otolaryngology was available in all countries surveyed, the duration of training (median four years) varied significantly, ranging

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TABLE VI
AVAILABILITY OF EQUIPMENT RELATED TO OTOLARYNGOLOGY PRACTICE IN PRIVATE SECTOR

Equipment	Private services									
	None		Very poor		Poor		Good		Excellent	
	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)	Country	Total (*n*)
Flexible nasopharyngo-scope		–	By, Si	2	E, Lt, Sk, U	4	A, Bg, C, Lv, P, Sr, Ru	7	G, Ro	2
Operating microscope		–	By	1	Lt, P, Sk, Si, U, Ru	6	A, Bg, C, E, Lv, Sr	6	G, Ro	2
Otological drill	By, Lt, Si	3		–	Bg, E, P, Ru, Sr	5	A, C, Lv, Sk, U	5	G, Ro	2
CO_2 laser	By, Si	2	Sk, Ro	2	A, Bg, C, Lv, Lt, P, U, Ru, Sr	9	E	1	G	1
CT scanner		–	E, Sk	2	By, P	2	A, Bg, C, Lt, Si, Sr, U, Ru	8	G, Lv, Ro	3
MRI scanner		–	By, E, P, Sk, Si	5	Lt	1	A, Bg, C, G, U, Ru, Sr	7	Lv, Ro	2
PET scanner	A, By, Bg, Lv, Lt, P, Si	7	E, Sk, Sr	3	Ro, U	2	C, G, Ru	3		–
Neck ultrasound		–	By	1	Bg,	1	A, C, E, Lt, P, Sk, Ro, Si, Sr, U, Ru	11	G, Lv	2
Fine needle aspiration cytology	By, Si	2	Ro, Sk, U	3	Bg, E	2	A, C, G, Lt, P, Ru, Sr	7	Lv	1
Frozen section histology	Si	1	By, C, P, U	4	Sk, Lt	2	A, Bg, G, Lv, Ro, Ru, Sr, E	8		–
Radiotherapy	By, C, E, P, Sk, Si	6	U, Ru, Sr	3	Bg, Lt	2	A, G, Lv, Ro	4		–

CO_2 = carbon dioxide; CT = computed tomography; MRI = magnetic resonance imaging; PET = positron emission tomography; A = Armenia; By = Belarus; Bg = Bulgaria; C = Croatia; E = Estonia; G = Georgia; Lv = Latvia; Lt = Lithuania; P = Poland; Ro = Romania; Sr = Serbia; Sk = Slovakia; Si = Slovenia; U = Ukraine; Ru = Russia

from one year (Belarus) to five years (Poland, Croatia, Slovenia and Slovakia). Some countries therefore have significantly shorter training when compared to Western European neighbours, which may affect the level of surgical experience in some training programmes. Despite a large number of otolaryngologists, Ukraine appears to be lagging behind its neighbours in terms of the availability of certain key services. Audiology services, the provision of conventional and bone conduction hearing aids, and tympanoplasty and mastoid surgery were reported as poorly or very poorly available in both state and private sectors in Ukraine. The reasons for this are beyond the scope of this study, but possible factors may include lack of training and/or infrastructure, and failing healthcare systems.[2]

There was 'none' or 'very poor' access to state radiotherapy services, which is integral to treating head and neck cancers, in three countries (Georgia, Armenia and Ukraine). Private otolaryngology services across the areas surveyed appeared to be consistently better than state services in Romania and Georgia, especially in regard to ear surgery. In the state sector, on the other hand, Estonia and Latvia showed strengths in audiology and ear surgery, with cochlear implant programmes good or better in all countries other than Romania; Ukraine is completely lacking a cochlear implant programme.

State audiology provision was considered 'poor' in Ukraine, Latvia, Armenia, Belarus, Latvia and Romania, and non-existent in Georgia. Despite this, professional training in audiology was available in all countries surveyed other than Russia, Ukraine, Bulgaria and Lithuania. However, in some countries, otolaryngologists practice audiology and therefore career training as audiologists is not available.

Expenditure on healthcare, based on the gross domestic product of the countries surveyed using 2014 statistics, ranged from a low of 4.5 per cent in Armenia to a high of 10.4 per cent in Serbia.[2] All other countries fell within the range above, as did the UK. With expenditures according to gross domestic product, Estonia outpaced all other countries in terms of having the best equipment in state services.

Our study is subject to several limitations. Unfortunately, the response rate to our survey was 17 per cent. Our best response rate was in Ukraine, where we were able to perform face-to-face surveys, indicating that the use of e-mail may have contributed to our low response rate. However, we feel that we mitigated the low numbers of responders by only asking qualified otolaryngologists listed by the International Federation of Otolaryngology Societies. We also corroborated the data for medical schools with an independent source.[9] We chose a subjective rating scale, so as to enable comparison with previously published studies by authors from our group,[7,8] and we acknowledge a lack of objectivity. However, given the limited published work in this field, we feel this study provides

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some much-needed preliminary data. These data can help to identify shortcomings in key clinical areas, and guide future, more formal studies on the health challenges for patients with ENT diseases in Ukraine and surrounding countries.

This study has shown that, despite high numbers of otolaryngologists, the healthcare services for patients with ENT disease in Ukraine are lagging significantly when compared to its neighbours. Healthcare reform in Ukraine is vital to achieve health parity with Western Europe. This requires interventions and support at many levels, and there are ample opportunities for otolaryngologists, audiologists and speech therapists from more developed healthcare systems to support more advanced training of professionals in the region.

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