Table 1: The data-charting form*

Data of Interest [To be reported as: Present (✓); Absent (×); Not mentioned (NA)]

1.	Bibliometric	Author, year of publication, country, period (year) of recruitment, type of surgery, number operated, follow-up duration, outcome measure, mortality, complications, QOL and cost
2.	Sufficient staffing of qualified personnel	Epileptologist, neurosurgeon, neuropsychologist, and neuroradiologist, psychiatrist, nursing and technical staff
3.	Technical equipment (minimum)	Video-EEG monitoring (VEM) unit (≥64-channel EEG, 1.5-Tesla MRI, at least two of any epilepsy-specific imaging (single-photon emission computed tomography [SPECT], positron emission tomography [PET], functional MRI [fMRI], MRI post-processing, magnetoencephalography [MEG], and 64-256-channel EEG with source imaging [ESI]).
4.	Training of staff	A certain period of training at an epilepsy centre is required.
5.	Intensive monitoring /VEM evaluation	24-h continuous supervision during VEM is required in case of AED reduction and for immediate recognition of emergency situations.
6.	Follow-up, quality assurance, and data acquisition	Appropriate minimum data capture. Recording of relevant pre- and post-operative data at regular intervals to ensure patient's course is documented
7.	Cooperation/Collaboration	Close and collegial contact with leading epilepsy centres

** Charting form developed from the revised version of quality guidelines for pre-surgical epilepsy evaluation and surgical epilepsy treatment by the Austrian, German, and Swiss working group by Rosenow et al. 2016 [29]. Serial number 2 to 7 is based on the recommendation. QOL – Quality of Life, MRI – Magnetic Resonance Imaging, AED – Antiepileptic drug, EEG – Electroencephalography.*

Table 2: Countries and centers reporting epilepsy surgery and available resources

Region	Country	Authors/Dates	Centre/Hospital	Sufficiently qualified personnel	Minimum technical equipment	Staff training	Intensive monitoring VEM	Follow-up, quality assurance, and data acquisition	Cooperation and Collaboration
Africa	South Africa	Krynauw 1950 [33]	Johannesburg Hospital	×	×	NA	×	×	NA
	South Africa	Butler 2005 [34]	Two university neurology departments and a private epilepsy center	✓	✓	NA	NA	NA	NA
	Kenya	Ruperti 1997 [35]	African Neurological Diseases Research Foundation	×	×	NA	NA	NA	NA
	Uganda	Boling et al. 2009 [36], Fletcher et al. 2015 [37], Mandell et al. 2015 [38]	CURE Children's Hospitalof Uganda (CCHU)	✓	×	✓	✓	✓	✓ASHA, USAID, ICTEUS, MNI and Stellate Inc.
	Morocco (Rabat)	Lahjouji et al. 2009 [39]	Hôpital des Spécialités, CHU Rabat	NA	✓	NA	✓	✓	×
	Morocco (Fez)	Souirti et al. 2016 [40]	Hassan II University Hospital of Fez	×	✓	NA	✓	✓	✓
	Tunisia	Khiari et al. 2010 [41]	Charles Nicolle Hospital Tunis	×	✓	✓	✓	✓	✓Charles Nicolle Hospital, Rouen EUMEDCONNECT network project
	Egypt	Kassem et al. 2013 [42]	Cairo University Hospital	✓	✓	NA	✓	✓	×
Latin America and the Carib	Brazil	Alonso et al. 2006 [43], Araújo Filho et al. 2012 [44], Jardim et al. 2012 [45]	Universidade Federal de São Paulo, (UNIFESP),	✓	✓	NA	✓	✓	×

bean									
	Brazil	Amaral et al. 2014 [46]	Universidade Federal de Minas Gerais (UFMG)	NA	✓	NA	✓	NA	×
	Brazil	Frayman et al. 1999 [47], Cukiert et al. 2000 [48], Baldauf et al. 2006 [49]	Epilepsy Surgery Program, Hospital Brigadeiro, São Paulo	NA	✓	NA	✓	✓	×
	Brazil	Zanni et al. 2009 [50], Meguins et al. 2015 [51], Meguins et al. 2015 [52]	Faculdade de Medicina de Sao Jose do Rio Preto (FAMERP)	✓	✓	NA	✓	✓	NA
	Brazil	Paglioli et al. 2004, [53] Almeida et al. 2010 [54], Hemb et al. 2013 [55]	Epilepsy Surgery Center, Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre	✓	✓	NA	✓	✓	NA
	Brazil	Meneses et al. 2005 [56], Meneses et al. 2013 [57], Nascimento et al. 2016 [58]	Universidade Federal do Paraná (UFPR), Curitiba	✓	✓	NA	✓	✓	×
	Brazil	Guimaräes et al. 2003 [59], Bonilha et al. 2004 [60], Yasuda et al.2009 [61], Gagliardi et al. 2011 [62]	UNICAMP Campinas Sao Paulo	✓	✓	NA	✓	✓	×
	Brazil	Sales et al. 2006 [63], Terra et al. 2010 [64], Bianchin et al. 2014 [65]	Center for Epilepsy Surgery at Ribeirao Preto (CIREP), University of São Paulo	✓	✓	✓	✓	✓	×
	Chile	Campos et al. 2000 [66]	Catholic University of Chile, Santiago Chile.	×	✓	NA	✓	✓	×
	Chile	Acevedo et al. 2015 [67]	Instituto de Neurocirugia Asenjo (INCA)	×	✓	NA	✓	✓	×
	Costa Rica	Brian et al. 2003 [68]	Hospital Nacional de Niños, Centro Ciencias Médicas "Dr. Carlos Sáenz Herrera"	NA	NA	NA	✓	✓	×
	Ecuador	Fernandez-Concepcion et al. 2018 [69]	Hospital Baca Ortiz in Quito,	✓	✓	NA	✓	✓	×
	Colombia	Fandino-Franky 2000 [70], Tureczek et al. 2000 [71], Benedetti-Isaac et al. 2013 [72], Benedetti-Isaac et al. 2015 [73]	Hospital Neurologico Liga Colornbiana Contra La Epilepsia, Cartagena, Colombia.	✓	✓	NA	✓	✓	✓
	Colombia	Freire et al. 2016 [74]	Fundación cardiovascular of Colombia, Bucaramanga	✓	✓	NA	✓	✓	×
	Bolivia	Jiménez Torres et al. 2014 [75]	Neurología/Neurocirugía del Hospital Materno Infantil de la Caja Nacional de Salud Regional La Paz,	✓	✓	NA	✓	✓	×

	Peru	Mejía-Tupa et al. 2014 [76], Mejía-Tupa et al. 2015 [77]	Hospital Nacional Guillermo Almenara (HNGAI) EsSalud. Lima	✓	✓	✓	✓	✓	×
	Argentina	Pomata et al. 2010 [78], Caraballo et al. 2011 [79], Vázquez et al. 2008 [80], Vázquez et al. 2008 [81]	Hospital de Pediatría Prof. Dr. Juan P. Garrahan, Buenos Aires	✓	✓	✓	✓	✓	×
	Argentina	Donadıo et al. 2011 [82], Zaknun et al. 2008 [83]	Institute for Neurological Research FLENI, Buenos Aires	✓	✓	✓	✓	✓	✓
	Argentina	Oddo et al. 2012 [84]	Epilepsy Center of the Hospital Ramos Mejıa	✓	✓	NA	✓	✓	NA
	Mexico	Velasco Monroy et al. 2013 [85]	Epilepsy Clinic of the General Hospital of México	✓	✓	NA	✓	✓	×
	Mexico	Alonso-Vanegas et al. 2010 [86], Alonso-Vanegas et al. 2016 [87], Alonso-Vanegas et al. 2017 [88]	National Institute of Neurology and Neurosurgery and Centro Neurológico Centro Médico ABC Santa Fe	✓	✓	NA	✓	✓	×
	Uruguay	Surgical Programme of Epilepsy [89], Natola et al. 2011 [90]	Institute of neurology University Hospital, Montevideo, Uruguay	NA	✓	NA	✓	NA	NA
	Venezuela	Gonzalez et al. 2017 [91],	Hospital Universitario de Caracas	✓	✓	NA	✓	NA	NA
	Cuba	Chacón et al. 2009 [92], Bender del Busto et al. 2010 [93], Morales et al. 2009 [94]	International Neurological Restoration Center (CIREN), Havana	✓	✓	NA	✓	NA	NA
Asia and Europe	India	Bhatia et al. 1999 [95], Shukla et al. 2003 [96], Sarkar et al. 2006 [97], Ahmad et al. 2007 [98], Tripathi et al. 2008 [99], Chandra et al. 2008 [100], Zaknun et al. 2008 [83], Dagar et al. 2011 [101], Chandra and Tripathi 2015 [102], Dwivedi et al. 2017 [103], Malhotra et al. 2016 [104], Barbaro et al. 2018 [105]	All India Institute of Medical Sciences (AIIMS) New Delhi	✓	✓	✓	✓	✓	✓
	India	Daniel and Chandy 1999 [106], Daniel et al. 2001 [107]	Christian Medical College, (CMC) Vellore	✓	✓	✓	✓	✓	NA
	India	Rao and Radhakrishnan 2000 [108], Sylaja et al. 2004 [109], Panda et al. 2005 [110], Radhakrishnan et al. 2007 [111],	R. Madhavan Nayar Center for comprehensive Epilepsy Care, Sree Chitra Tirunal Institute for Medical Sciences and Technology,	✓	✓	✓	✓	✓	NA

	George et al. 2009 [112], Ramesha et al. 2009 [113], Chemmanam et al. 2009 [114], Chaudhry et al. 2010 [115], Ramesha et al. 2011 [116], Dash et al. 2012 [117], Asranna 2017 [118], Rao et al. 2017 [119]	Trivandrum (SCTIMST), Kerala						
India	Jayalakshmi et al. 2011 [120], Panigrahi et al. 2016 [121]	Krishna Institute of Medical Sciences (KIMS), Secunderabad and Hyderabad	×	✓	✓	✓	✓	NA
India	Ravat et al. 2016 [122], Ravat et al. 2016 [123], Shah et al. 2016 [124]	Comprehensive Epilepsy care Centre, King Edward VII Memorial (KEM) Hospital, Mumbai	✓	✓	NA	✓	✓	NA
Bangladesh	Chowdhury et al. 2010 [125]	Department of Neurosurgery, Dhaka Medical College Hospital, Dhaka	✓	×	NA	×	✓	NA
China	Liang et al. 2010 [126]	Capital Epilepsy Therapy Center in Beijing. First Affiliated Hospital of General Hospital of PLA	✓	✓	NA	✓	✓	×
China	Guan et al. 2013 [127]	Beijing Sanbo Brain Hospital, Capital Medical University, Beijing	✓	✓	NA	✓	✓	×
China	Dong et al. 2012 [128]	First Affiliated Hospital Baotou Medical College	✓	✓	NA	✓	NA	×
China	Wang et al. 2011 [129]	Third People's Hospital Bengbu Anhui	✓	✓	NA	✓	NA	×
China	Guangming et al. 2013 [130]	Epilepsy Center, Yuquan Hospital Tsinghua University	✓	✓	NA	✓	NA	×
China	Jia-tang et al. 2008 [131]	The Second Affiliated Hospital of Guiyang Medical College	NA	✓	NA	✓	NA	×
China	Kuang et al. 2011 [132]	Chengdu General Hospital of Chengdu Military Command.	✓	✓	NA	✓	NA	×
China	Liang et al. 2015 [133]	Hebei General Hospital, Shijiazhuang	✓	✓	NA	✓	NA	×
China	Liang et al. 2012 [134]	First Affiliated Hospital of Chinese People’s Liberation Army General Hospital (1 of 4 centres)	✓	✓	NA	✓	✓	✓

China	Luan et al. 2002 [135], Sun et al. 2002 [136], He et al. 2015 [137], Meng et al. 2015 [138]	Beijing Tiantan Hospital	NA	✓	NA	✓	NA	×
China	Yang et al. 2007 [139], Yang et al. 2008 [140], Yang et al. 2009 [141]	Xinqiao Hospital, Third Military Medical University	NA	✓	NA	✓	NA	×
China	Yang et al. 2004 [142], Yang et al. 2007 [143]	General Hospital Tianjin Medical University, Tianjin	NA	✓	NA	✓	NA	×
China	Wu et al. 2011 [144], Zeng et al. 2012 [145], Zeng et al. 2014 [146], Chen and Lei 2014 [147]	West China Hospital of Sichuan University	✓	✓	NA	✓	✓	×
China	Yang et al. 2014 [148], Yang et al. 2014 [149]	Epilepsy Centre, Fuzhou General Hospital	✓	✓	NA	✓	✓	×
China	Yu et al. 2014 [150], Wang et al. 2009 [151]	Fourth Neurosurgery Center of the Affiliated Hospital of Harbin Medical University	✓	✓	NA	✓	✓	×
China	Lin et al. 2001 [152]	First Affiliated Hospital, Fujian Medical University	✓	✓	NA	✓	✓	×
China	Zonghui et al. 1997 [153]	General Naval Hospital Beijing	NA	✓	NA	✓	NA	×
China	Piao et al. 2010 [154]	Beijing Institute of Functional Neurosurgery, Xuanwu Hospital, Capital Medical University	NA	✓	NA	✓	NA	×
Jordan	Al-Ghanem et al. 2009 [155], Faleh-Tamimi and Qudah 2002 [156]	Jordan University Hospital, Amman	✓	✓	NA	✓	✓	×
Jordan	Aburahma et al. 2015 [157]	King Abdullah University Hospital and Jordan University Hospital in Jordan	✓	✓	NA	✓	✓	×
Saudi Arabia	Alsemari et al. 2014 [158]	King Faisal Specialist Hospital & Research Centre (KFSHRC)	✓	✓	NA	✓	✓	×
Thailand	Locharernkul et al. 2005 [159], Kanchanatawan and Kasalak 2012 [160], Kanchanatawan et al. 2014 [161], Srikijvilaikul et al. 2004 [162], Zaknun et al. 2008 [83]	Chulalongkorn Comprehensive Epilepsy Program (CCEP), Chulalongkorn University Hospital	✓	✓	✓	✓	✓	✓
Thailand	Visudhiphan 1999 [163]	Ramathibodi Hospital, Bangkok	NA	✓	NA	✓	✓	×

Thailand	Kitwitee et al. 2017 [164]	Prasat Neurological Institute (PNI)	✓	✓	NA	✓	✓	×
Lebanon	Mikati et al. 2006 [165], Mikati et al. 2012 [166]	American University of Beirut	✓	✓	NA	✓	✓	✓
Pakistan	Ahmed et al. 2009 [167], Tahir et al. 2012 [168], Sheerani 2005 [169]	Aga Khan University Hospital	✓	✓	NA	✓	✓	✓University of Alberta Hospital (UAH), West Virginia University
Iran	Asadi-Pooya et al. 2013 [170], Asadi-Pooya et al. 2014 [171], Asadi-Pooya et al. 2015 [170]	Shiraz University of Medical Sciences	✓	✓	NA	✓	✓	✓Thomas Jefferson University,
Iran	Pakdaman et al. 2016 [173]	Loghman Hospital Tehran	NA	✓	NA	NA	NA	×
Turkey	Ozkara et al. 2000 [174], Aydemir et al. 2004 [175]	Istanbul University, Istanbul,	✓	✓	NA	✓	✓	×
Turkey	Hirfanoglu et al. 2016 [176]	Gazi University School of Medicine	✓	✓	NA	✓	✓	×
Malaysia	Sayuthi et al. 2009 [177]	Hospital University Sains Malaysia	NA	✓	NA	✓	✓	NA
Georgia	Kasradze et al. 2015 [178]	Epilepsy Center of Institute of Neurology and Neuropsychology (ECINN), Tbilisi	NA	✓	NA	✓	✓	×
Georgia	http://www.augusta.edu/mcg/neurology/epilepsy/adult/epsurgery.php [179]	Augusta University Surgical Epilepsy Surgery	✓	✓	NA	✓	✓	×
Moldova	Matkovskii et al. 2007 [180]	The epilepsy centre of the Republic of Moldova	NA	✓	NA	✓	NA	NA

Information from some of these centres was acquired from more than one publication. ✓Available; ×Not available; NA – Not mentioned/unsure. MNI - Montreal Neurological Institute, ASHA – American Schools and Hospitals Abroad, USAID – United States Agency for International Development, ICTEUS – The International Consortium for the Treatment of Epilepsy in Underserved Settings.

Table 3: Epilepsy surgery outcomes from low- and middle-income countries

Author/Date	Country	Number operated	Follow-up Duration	Type of Surgeries	Seizure Outcome	
					Engel score I	Engel score I and II
Boling et al. 2009 [36]	Uganda	10	1 year	CAH	60%	80%
Fletcher et al. 2015 [37]	Uganda	10	8 years	CAH	70%	
Souirti et al. 2016 [40]	Morocco	7		Hippocampectomy, lesion excision	57%	71.3%
Khiari et al. 2010 [41]	Tunisia	10	2 years	Hippocampectomy	40%	
Kassem et al. 2013 [42]	Egypt	137	1 year	Hippocampectomy		> 70%
Bonilha et al. 2004 [60]	Brazil	30	46 months	Anterior TL resection plus AH	53%	83%
Alonso et al. 2006 [43]	Brazil	35	6 months	CAH	51%	
Araújo Filho et al. 2012 [44]	Brazil	115	4.7 $\pm$ 1.66 years	CAH	69.5%	89.5%
Jardim et al. 2012 [45]	Brazil	66	$\geq$ 6 months	Temporal lobe resection	72.7%	89.4
Amaral et al. 2014 [46]	Brazil	34		Temporal lobe resection		64.7%
Baldauf et al. 2006 [49]	Brazil	41	4.3 $\pm$ 1.1 years	CAH	95.1%	100%
Meguins et al. 2015 [51]	Brazil	127	1 year	NCC associated TLE	62.2%	91.3%
Paglioli et al. 2004 [53]	Brazil	135	1 year	Temporal lobe resection	89%	
			2 years		86%	
			5 years		83%	
			10 years		81%	
Almeida et al. 2010 [54]	Brazil	384		Temporal epilepsy and extratemporal epilepsy	91.4%	
Meneses et al. 2005 [56]	Brazil	43		Temporal lobe surgery	83.7%	
Nascimento et al. 2016 [58]	Brazil	67	64 months (median)	ATL and SAH		82%
Yasuda et al. 2009 [61]	Brazil	67		Anterior temporal lobe resection plus AH		85%
Bonilha et al. 2004 [60]	Brazil	30	46 months	Anterior temporal lobe resection plus AH	53%	83%
Terra et al. 2010 [64]	Brazil	267	~ 5 years	Temporal lobectomy Hemispherectomy Lesionectomy, Multilobar resections, lobectomy, CC, SAH	–	72.6%
Bianchin et al. 2014 [65]	Brazil	191		Anterior temporal resection	74%	

Campos et al. 2000 [66]	Chile	17	29.1 months	ATL	88.2%	94.1%
Pomata et al. 2010 [78]	Argentina	150	1 year	CDM Resections, lesionectomy, corticoectomy, ATL, CAH, CC	75.3%	86.6%
Caraballo et al. 2011 [79]	Argentina	45	9.5 years	Hemispherectomy	73.5%	86.8%
Donadıo et al. 2011 [82]	Argentina	84	1 year	Lobectomies, CC, MST, VNS, Lesionectomies, Hemispherectomies	72.6%	89.2%
		110	1 – 3 years		68.1%	84.0%
			3 – 5 years		74%	88.0%
		45	5 years		78%	91.5%
Vázquez et al. 2008 [80]	Argentina	91		TLR	84.6%	94.5%
Vázquez et al. 2008 [81]	Argentina	49		Hemispherectomy	81.6%	89.8%
Oddo et al. 2012 [84]	Argentina		1 year	Temporal lobectomy	85.7%	84.2%
Velasco Monroy et al. 2013 [85]	México	57	1 year	ATL with AH	84%	
Alonso-Vanegas et al. 2016 [87], Alonso-Vanegas et al 2017 [88]	Mexico	67	5.7 years	SMA resection using subpial/endopial technique	61%	92%
Fandino-Franky 2000 [70]	Colombia	97	35 months	CC		66.3%,
Tureczek et al. 2000 [71]	Colombia	89	6 years	ATL	81%	97%
		11	6 years	Hemispherectomies	45.5%	81.9%
		80	6 years	Corpus callosotomy	30%	71.3%
Benedetti-Isaac et al. 2013 [72]	Colombia	21	6.5 years	Temporal lobectomies		90.5%
Jiménez Torres et al. 2014 [75]	Bolivia	16		TLR and Extra-TLR	50%	69%
Mejía-Tupa et al. 2014 [76]	Peru	7		Hemispherectomy, lesionectomy, TR	71%	
Bhatia et al. 1999 [95]	India	20	20.5 months	TL, Extra-temporal resection, CC	65%	75%
Shukla et al. 2003 [96]	India	25	16.8 months	Extra-temporal resection		87%
Ahmad et al. 2007 [98]	India	36	6 months	ATL, subpial-AH, extratemporal lesionectomy	77%	
Tripathi et al. 2008 [99]	India	57	3.0 ± 5.8 years	Resection ± MST Hemispherotomy in one.	51%	77%
Chandra et al. 2008 [100]	India	19	6.5 years	Hemispherotomy	95%	100%
Dagar et al. 2011 [101]	India	118	≥ 1 year	TL, ALTL, extratemporal resections, CC, VNS Hemispherotomies,	79.5%	88.4%
Chandra and Tripathi 2015	India	11	8.4 months	Endoscopic hemispherotomy	81.8%	100%

[102]						
		7	9.2 ± 1.46 months	Endoscopic disconnection for HH	71.4%	85.7%
Dwivedi et al. 2017 [103]	India	57	1 year	TLR, Extra-TLR, hemispherotomy, CC, HH	77.2%*	84.2%*
Daniel and Chandy 1999 [106]	India	80	10 years	Topectomy ± Amygdalectomy, TL ± amygdalectomy, hippocampectomy, amygdalectomy, Hemispherectomy, Stereotactic ansotomy		53%
Daniel et al. 2001 [107]	India	6		Peri-insular hemispherotomy	83.3%	99.9%
Rao and Radhakrishnan 2000 [108]	India	119	1 year	ATL	53.4%	
		68.	2 years	ATL	67.6%	
		29	3 years	ATL	69%	
Sylaja et al. 2004 [109]	Indian	17	≥ 1 year	ATL	29.4%	
Panda et al. 2005 [110]	India	34	4 years (median)	Lesionectomy, ATL, AH, SAH.	79%	94%
Radhakrishnan et al. 2007 [111]	India	373	4.5 years (median)	ATL ± AH, SAH	70.5%	
George et al. 2009 [112]	India	172	4.9 ± 1.1 years	ATL		78.5%
Ramesha et al. 2009 [113]	India	10	2 years	Hemispherotomy, hemispherectomy or focal resection	70 %	
Chemmanam et al 2009 [114]	India	48		TLR, extra-temporal resections, CC, VNS.	78.4% for TLR	
Chaudhry et al. 2010 [115]	India	61	5 years (median)	Lesionectomy, Lobectomy, Frontal cyst decompression, Multilobar resection, MST, AH		62.7%
Dash et al. 2012 [117]	India	71	2.6 years	Extratemporal resective surgery	73.2%	
Jayalakshmi et al. 2011 [120]	India	87	2.6 years	ATL with AH, lesionectomy, and functional hemispherectomy	64.1%	
Panigrahi et al. 2016 [121]	India	697	≥ 1 year	TL, lesionectomy, multilobar resections, hemispherotomy, CC, HH resection, VNS		85.7% for TLE 65.2% for ETLE
Ravat et al. 2016 [122]	India	34	62 months	ATL with AH, lesionectomy	85.3%	91.2%
Ravat et al. 2016 [123]	India	51	33 months	Lesionectomy, lesionectomy ± ATL	84.3%	90.2%

Guan et al. 2013 [127]	China	16	1.6 years	Temporoparietooccipital and parietooccipital disconnection	81%	87.3%
Dong et al. 2012 [128]	China	15	≥ 6 months	TL, SAH, lesionectomy		80%
Wang et al. 2011 [129]	China	65	6 months – 11 years.	Resection of degenerative brain tissues, TL, CC, MST	40%	53.8%
Kuang et al. 2011 [132]	China	32	1 year	Microsurgical excision, Partial ATL, hippocampectomy, amygdalotomy and bipolar electrocoagulation	84.4%	
Liang et al. 2010 [126]	China	29	1 year	Tuber resections, ± lobectomies ± CC	72%	88%
			2 years		60%	80%
			3 years		54.5%	72.7%
Liang et al. 2015 [133]	China	14	1 year	CC	28.6%	
			3 years		22.2%	
Liang et al. 2012 [134]	China	206 children	1 year	lesion resection, ATL and SAH	84.0%	94.2%
			2 years		72.3%,	87.8%
			5 years		67.5%	85.0%
Luan et al. 2002 [135]	China	108	1 – 5 years	Bipolar electrocoagulation on functional cortex	75.9%	
Sun et al. 2002 [136]	China	15	3 – 12 months	combined surgeries: CC, hippocampectomy , resections and bipolar coagulation	93%	
Yang et al. 2007 [139]	China	114	1 – 5 years	TL, Extratemporal lobectomy and AH	74.6%	88.6%
Yang et al. 2008 [140]	China	189	1 – 14 years	ATL, Extra TL, AH	62.4%	77.7%
Yang et al. 2009 [141]	China	236	2 – 15	ATL, extra TL, AH; MST	67.4%	81.8%
Yang et al. 2004 [142]	China	45	3 – 28 months.	MST; epileptogenic zone resection; anterior CC, AH	37.8%	
Yang et al. 2007 [143]	China	16	6 – 32 months	stereotactic AH; MST	44%	69%
Wu et al. 2011 [144]	China	143.	1 – 3 years	ATL, lesionectomy, Hemispherectomy	63.8%	85.1%
				For FLE	61.1%	72.7%
Zeng et al. 2012 [145]	China	131	6 months	TL, extra-temporal surgery	79.4%	
			2 years	TL, extra-temporal surgery	61.0%	77.8%
Zeng et al. 2014 [146]	China	319	6 months	TLE, ETLE and hemispherectomy	71.5%	
			2 years		65.5%	

			5 years		34.2% no AEDs 32.6% with AEDs	
Chen and Lei 2014 [147]	China	100	2 years		73%	
	China	100	3 years		75%	
Yang et al. 2014 [148]	China	133	>2 years	Resections	48.9%	72.2%
Lin et al. 2001 [152]	China	51	3 years	ATL, ETL, AH, MST	64.7%	88.2%
Zonghui et al. 1997 [153]	China	60	6 months	MST	60%	
Alsemari et al. 2014 [158]	Saudi Arabia	502	1 year	TLE surgery	Class I, II and III*	79.6%*
				FLE surgery		62%*
				Parietal and occipital lobe		67%*
				Multilobar surgery		65%*
				Hemispherectomy		64.2%*
			3 years	TLE surgery		74.2%
				FLE surgery		52%
				Parietal and occipital lobe		67%
				Multilobar surgery		50%%
				Hemispherectomy		63%
			5 years	TLE surgeries		67%
Locharernkul et al. 2005 [159]	Thailand	111	3 years	ATL, SAH; Lesionectomy cortical resection.	83.8%	
Kanchanatawan and Kasalak 2012 [160]	Thailand	60	> 1 year	ATL, tumours, lesionectomy or cortical resection	66%	
Kanchanatawan et al. 2014 [161]	Thailand	189	6 months	ATL, tumours, lesionectomy or cortical resection	78.8%	
			2 years		88.3%	
Visudhiphan 1999 [163]	Thailand	14	6 months – 5 years	ATL	70%	
Kitwitee et al. 2017 [164]	Thailand	63	1 year	ATL, Resection	79.4%	
			2 years		77.8%	
Zaknun et al. 2008 [83]	Thailand India, Italy and Argentina.	74	1 year	TL surgery	89%	96%
Srikijvilaikul et al. 2004 [181]	Thailand.	35	≥ 1 year	TL surgery	74%	81%
Mikati et al. 2006 [165]	Lebanon	20	33.9 ± 9.1 months	TL	95%	100%
Mikati et al. 2012 [166]	Lebanon	93		TL and ETLE resections, multilobar resections, CC, hemispherectomy and VNS	70%	79%
Ahmed et al. 2009 [167]	Pakistan	3		TL, SAH, lesionectomy	67%	

Tahir et al. 2012 [168]	Pakistan	16	1 year	Neuro-navigation-guided SAH keyhole technique	100%	
			2 years	ATL	83%	
			4 years	Hemispherectomy	66%	
Asadi-Pooya et al. 2015 [172]	Iran	22	24.8 ± 7.7 months		68.2%	81.8%
Ozkara et al. 2000 [174]	Turkey	77	17 months.	TLR, extra TL, multilobar resections.	75%	90%
Hirfanoglu et al. 2016 [176]	Turkey	61	2 years	TLE	88.9%	93.3%
				ETL	50%	93.3%
Sayuthi et al. 2009 [177]	Malaysia	7	1 year	Lesionectomy, ATL, AH or combination	71%*	

**ILAE classification; CAH – Corticoamygdalohippocampectomy, CC – Corpus Callosotomy, TL – Temporal lobectomy, ATL – Anterior temporal lobectomy, ALTL – Anterolateral temporal resections, TLE – Temporal lobectomy epilepsy, ETL – Extra-temporal lobectomy - HH – Hypothalamic Hamartoma, AH – Amygdalohippocampectomy, SAH – Selective Amygdalohippocampectomy, TLR – Temporal lobe resection, MST – Multiple subpial transection, VNS – Vagus Nerve Stimulation, NCC – Neurocysticercosis*

Table 4: Vagus Nerve Stimulation or Neuro-stimulation from low- and middle-income countries

Author/Date	Country	Period	Centre	Number	Follow-up period	Outcome
Meneses et al. 2013 [57]	Brazil	2007 – 2012	Instituto de Neurologia de Curitiba, Curitiba	6	26.6 months	Seizure decreased by 40–50% and ≥80% in 67%
Benedetti-Isaac et al. 2015 [73]	Colombia	2010 – 2014	Colombian Center and Foundation of Epilepsy and Neurological Diseases (FIRE), Cartagena de Indias	9	4 years	DBS of posteromedial hypothalamus (pHyp) led to improvement of aggressiveness and QOL in people with DRE associated with aggressive behaviour.
Alonso-Vanegas et al. 2010 [86]	Mexico	2001 – 2004	NNNI and NCMS	35	> 12 months	An overall seizure reduction – 55.7%. >90% seizure-free rate – 11.4%, seizure-free – 5.7%, seizure increased – 5.7%. QOL improved overall.
Jayalakshmi et al. 2011 [120]	India	2003 – 2009	KIMS Hyderabad	5	≥ 1 year	3 had remission by >50%, one by 40%, and no significant change in one.
Meng et al. 2015 [138]	China	2008 – 2014	Beijing Tiantan Hospital and Beijing Fengtai Hospital	94	42.3 months	Engel I – 12.8%, Engel II – 11.7%, Engel III – 39.4%, Engel IV – 36.2%. ≥ 50% seizure reduction in 63.8% of patients
Wang et al. 2009 [151]	China	2001 – 2004	Two epilepsy centers (Harbin and Shanghai)	8	55.8 months	Seizure reduction ≥ 50%
Aburahma et al. 2015 [157]	Jordan	2007 – 2011	King Abdullah University Hospital and Jordan University Hospital in Jordan	28		54% of patients had ≥ 50% seizure reduction. QALY gain of 3.78 years for children and 1 year for adolescents per lifetime. and reduced financial burden.
Pakdaman et al. 2016 [173]	Iran		Loghman hospital Tehran	44	5 years	Mean seizure reduction – 57.8% in 1st year, 59.6% in 2nd year, 65% in 3rd year, 65.9% in 4th year, and 67% in 5th year of follow-up

NNNI – National Neurology and Neurosurgery Institute "Manuel Velasco Suarez"; NCMS – Neurosciences Center from Medica Sur Foundation, KIMS – Krishna Institute of Medical Sciences, DBS – Deep Brain Stimulation, DRE – Drug Resistant Epilepsy, QOL – Quality of Life, QALY – Quality-adjusted life years.

Table 5: Quality of life (QOL) of epilepsy surgery candidates in low- and middle-income countries

Author/Date	Country	Centre	Period	Surgery type	Number	QOL results
Frayman et al. 1999 [47]	Brazil	Hospital Brigadeiro, São Paulo	1997	TL, CC	12	Surgical candidates had better post-operative profile in 70% of questions.
Guimaräes et al. 2003 [59]	Brazil	UNICAMP Campinas		TL, resection, hemispherectomy,	9	Overall QOL improved after surgery and correlated with seizure control.
Aydemir et al. 2004 [175]	Turkey	Istanbul University		SAH	20 pre-SAH 21 post-SAH	Better QOL observed in post-SAH compared to pre-surgery group. Higher seizure frequency, comorbidity, and number of AEDs had a negative influence on QOL.
Locharernkul et al. 2005 [159]	Thailand	Chulalongkorn University Hospital	2002 - 2004	ATL, SAH; Lesionectomy, resections.	111	Surgery improved employment, working ability and income. Seen best in seizure-free subjects.
Kanchanatawan and Kasalak 2012 [160]	Thailand	King Chulalongkorn Memorial Hospital	2007 – 2008	Various surgeries	60 each case and control	Surgery group had significantly higher QOL scores than those without surgery.
Mikati et al. 2006 [165]	Lebanon	American University of Beirut		Temporal Lobectomy	20 surgical and 17 non-surgical and 20 controls	QOL was significantly better in the surgery group (85% seizure free compared to 35% in the non-surgery groups) and no significant difference with healthy control.
Ahmad et al. 2007 [98]	India	AIIMS Delhi	2004 – 2006	ATL, AH, lesionectomies	36	Significant improvement reported in all domains of QOLIE-31 especially in those with good surgery outcome.
Dagar et al. 2011 [101]	India	AIIMS Delhi	2000 – 2011	ATL, SAH, resection, hemispherectomy,	40	Surgery improved QOL and scores correlated with duration of seizures, epileptic encephalopathy and outcome of surgery.
Ravat et al. 2016 [122]	India	K.E.M. Hospital, Mumbai	2001 – 2013	ATL + AH	34	Reported significant improvement in QOL scores. No negative impact of surgery on memory and intelligence.
Sayuthi et al. 2009 [177]	Malaysia	Hospital University Sains Malaysia	2004 – 2007	Lesionectomy, ATL, AH	7	Better post-operative QOL compared to pre-operative values. Definite with successful surgery.
Fletcher et al. 2015 [37]	Uganda	CCHU		Temporal lobe surgeries	10 surgical candidates and 9 no treated with AEDs	The QOLIE-31 scores were higher in surgical patients. Child/patient and parent/proxy surveys identified lower stigma in seizure-free patients.
Zanni et al. 2009	Brazil	Epilepsy surgery		TL, AH	30	Better post-surgical QOL compared to

[50]		centre - FAMERP				pre-surgical period. Improved patients' satisfaction and activities of daily living.
Gagliardi et al. 2011 [62]	Brazil	UNICAMP Campinas		TLE	13	No general improvement in the QOL post-operatively, but improvement in general health issues and adverse effects of AEDs and in relationships
Bender del Busto et al. 2010 [93]	Cuba	Centro Internacional de Restauración Neurológica (CIREN)	2002 – 2007	Partial temporal lobotomy and transurgical EchoG	20	The median QOLIE-31 score improved from 26.5 before surgery to 89 six months after, it plateaued at 84 after a year.
Liang et al. 2012 [134]	China	4 centres in china	2001 – 2007	ATL, SAH; lesionectomy, resections.	206 children	Post-operative QOL improved in 65.5% patients, impaired in 4.9%, and unchanged in 29.6%.
Liang et al. 2010 [126]	China	Capital Epilepsy Therapy Center Beijin	2001 – 2007	TSC: Tuber resections, lobectomies, or CC	25	Significant improvement of overall QOL especially for those who are seizure-free.

TL – Temporal lobectomy, CC- Corpus callosotomy, SAH – Selective amygdalohippocampectomy, AH – Amygdalohippocampectomy, ATL – Anterior temporal lobectomy, TLE – Temporal lobe epilepsy, TSC – Tuberosclerosis complex, CCHU – CURE Children's Hospital Uganda, EchoG – Electrocorticography, AED – Antiepileptic drugs, QOL – Quality of Life, QALY – Quality-adjusted life years, QOLIE – Quality of Life in Epilepsy.

Table 6: Average cost of epilepsy surgery in some low- and middle-income countries

Author/Date	Country	Centre	Average cost of surgery*
Campos et al. 2000 [66]	Chile	Catholic University of Chile, in Santiago de Chile.	US$ 5,020 – total cost, including evaluation and surgery
Fandino-Franky 2000 [70]	Colombia	Hospital Neurologico of the Liga Colornbiana Contra La Epilepsia, Cartagena,	US$ 3,137 – not requiring invasive methods US$ 3,995 – if invasive method is needed (For corpus callosotomies)
Tureczek et al. 2000 [71]	Colombia	Hospital Neurologico, HN-LCE Cartagena,	US$ 2,250
Chemmanam et al 2009 [114]	India	SCTIMST, Kerala	US$1500 – uncomplicated extra-temporal resective surgery and hospital stay US$ 3,400 – if requiring Invasive monitoring
Dash et al. 2012 [117]	India	SCTIMST, Kerala	US$ 1,500 – combined cost of pre-surgical evaluation, uncomplicated epilepsy surgery and hospital stay, US$ 3,400 – if requiring Invasive monitoring
Meng et al. 2015 [138]	China	Beijing Tiantan Hospital and Beijing Fengtai Hospital	US$ 30,000 per patient for VNS Therapy System
Wu et al. 2011 [144]	China	West China Hospital of Sichuan University	US$ 2,550 to US$ 4,230 – for the entire cost of surgery
Chen and Lei 2014 [147]	China	West China Hospital (WCH) of Sichuan University	US$ 7659 – average cost per patient
Tahir et al. 2012 [168]	Pakistan	Aga Khan University Hospital	US$ 1644 – direct total cost for regular care US$ 3044 – for private care.
Asadi-Pooya et al. 2014 [171], Asadi-Pooya et al. 2015 [172]	Iran	Shiraz University of Medical Sciences	US$ 500 – total cost for pre-surgical evaluation and surgery. US$ 300 – if on medical insurance
Kitwitee et al. 2017 [164]	Thailand	Prasat Neurological Institute (PNI)	US$ 6.200 – for the costs of VEEG, surgery and 1-year follow-up care

**These costs are average approximations. SCTIMST – Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, VNS – Vagus Nerve Stimulation, VEEG – Video-electroencephalography.*