



AUDIOLOGY IN GUATEMALA

- *By Patricia Castellanos de Muñoz, 2017*

Guatemala



Population: 16 million (2016 Estimate)

Area: 41,372 square miles

GDP(PPP): \$124.941 billion (2015 Estimate)

Currency: Guatemalan Quetzal (1 GTQ = 7.54 US Dollars)

Languages: Spanish

ABOUT AUTHOR

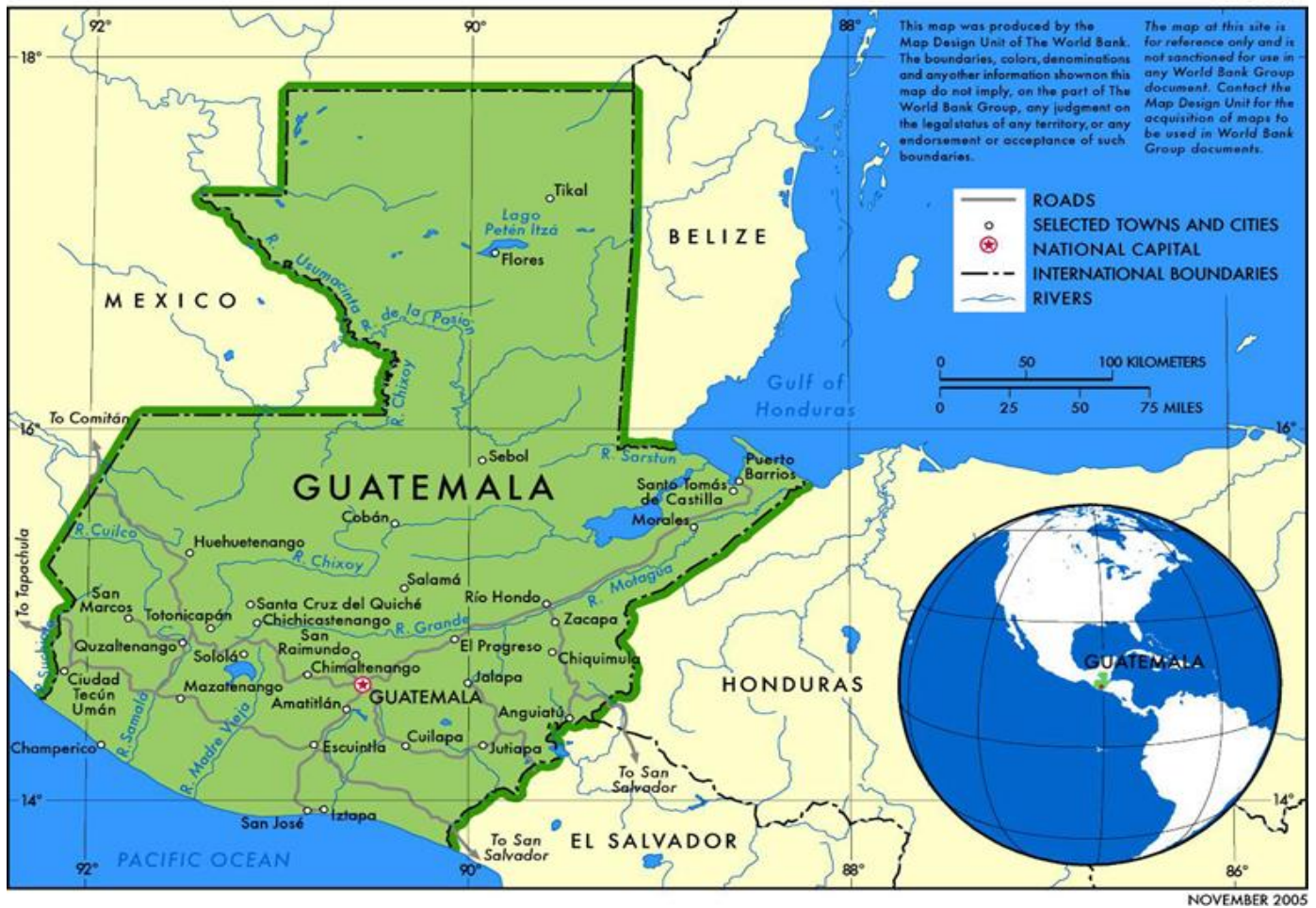
Patricia is the CEO and a clinician at Centro de Audición. Patricia also founded and is the president of Fundación Sonrisas que Escuchan (Smiles that Listen Foundation)

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DEMOGRAPHIC INFORMATION

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The territory of modern Guatemala once formed the core of the Maya civilization, which extended across Mesoamerica. The Spanish conquered most of the country by the 16th century. Guatemala attained independence from Spain in 1821 as part of the Federal Republic of Central America, which dissolved in 1841.



Guatemala's abundance of biologically significant and unique ecosystems includes a large number of endemic species and contributes to Mesoamerica's designation as a biodiversity hotspot. The country is also known for its rich and distinct culture, which is characterized by a fusion of Spanish and Indigenous influences.

Guatemala is a highly diverse country, populated by a variety of ethnic, cultural, racial, and linguistic groups. According to the 2010 Census conducted by the National Institute of Statistics (INE), about 41.5% of the population is Mestizo (also known as Ladino), reflecting mixed indigenous and European heritage. A

similar proportion of Guatemalans (41%) are of full Amerindian ancestry, which is among one of the largest percentage in Latin America, behind only Peru and Bolivia. Most indigenous Guatemalans are of the Maya people, namely K'iche' (11.0% of the total population), Q'eqchi (8.3%), Kaqchikel (7.8%), Mam (5.2%), and "other Maya" (7.6%). Less than 1% are indigenous non-Maya.

Guatemala's sole official language is Spanish, spoken by 93 percent of the population as either the first or second language.

Twenty-one Mayan languages are spoken, especially in rural areas, as well as two non-Mayan Amerindian languages: Xinca, which is indigenous to the country, and Garifuna, an Arawakan language spoken on the Caribbean coast. According to the Language Law of 2003, these languages are unrecognized as National Languages.

In terms of religion, a 2012 survey estimated Catholics at 47.6%, Protestants at 38.2%, other religions at 2.6%, and the non-religious at 11.6%.

From 1970 to 2016, and particularly since the 1990s, Guatemala has experienced the rapid growth of Protestantism, currently more than 38% of the population, and still growing.

Guatemala is a constitutional democratic republic whereby the President of Guatemala is both head of state and head of government, and of a multi-party system. The president exercises Executive power. Legislative power is vested in both the president and the Congress of the Republic. The judiciary is independent of the executive and the legislature.

Guatemala is the largest economy in Central America, with a GDP (PPP) per capita of US\$5,200. Guatemala faces many social problems and is one of the poorest countries in Latin America. The distribution of income is highly unequal with more than half of the population below the national poverty line and just over 400,000 (3.2%) unemployed. The CIA World Fact Book considers 54.0% of the population of Guatemala to be living in poverty.

Table 1: Country information (source Wikipedia)

Country name	Guatemala
Population	16,704,592 (2016 Estimate)
Area	41,372 Sq. miles/ 108,889 km ²
GDP (PPP)	\$124.941 billion (2015 estimate)
Languages	Spanish

HISTORY OF AUDIOLOGY/ AURAL CARE

Audiology services are present in Guatemala; however, there is only one university trained audiologist in the country. Approximately 40 years ago, the first audiology shop started dispensing hearing aids; no diagnostic or repair services were available.

Some years later, a second shop opened its doors. This one had better technology and more options for the clients.

As for pediatric services, hearing aids were being fitted without proper diagnosis; ABRs were being done by neurologists and no behavioral observation techniques were used.

Hearing aids were mainly Body aids and BTEs; very few people would try custom hearing aids, which were locally done. Digital technology was still years away.



In 1990 a new clinic opened its doors led by a young professional with a master's degree in Education for the Deaf from Gallaudet University. This clinic offered top of the line hearing aids, which were assembled in the United States. This seemed to be a trend for users who were looking for something new. This clinic, Centro de Audición, CEDAF, rapidly became the leader in hearing services and was responsible for introducing new technology through the years. Some examples are: the first completely in

the canal (CIC) hearing aid line, the first digital aids, otoacoustic emissions (OAEs), Auditory Steady State Response (ASSR), cochlear implants, bone anchored and middle ear implants, vestibular diagnosis (with equipment), real-ear measurements, and behavioral observation audiometry (with all its variants).

During this time, the clinician pursued further studies and completed her Doctorate of Audiology at University of Florida.

After CEDAF, came few other clinics, most of which were opened by former employees of audiologic clinics. They had some training, which was received during the time of their prior employment.

To date, there are approximately 10 hearing clinics throughout the country. Except for two, all of them offer hearing aid fitting and pure tone audiometry. One offers: hearing aid fitting, Auditory Brainstem Response (ABR), pure tone audiometry (PT) and recently vestibular testing. CEDAF offers: neonatal and school hearing screening, diagnostics for all ages (PT, ABR, and ASSR), all types of implants, vestibular diagnosis and rehabilitation, and hearing, speech and language therapy.

HEARING LOSS INCIDENCE AND PREVALENCE

Guatemala does not have prevalence nor incidence studies for hearing loss or any other disability; however, we have one of the highest birthrates in Latin America. According to the National Institute of Statistics, it is 2.4%, which in 2016 meant that approximately 1000 babies were born every day. If conservative international rates are applied, Guatemala should expect an average of 3 babies born every day with some degree of hearing loss.



INFORMATION ABOUT AUDIOLOGY

EDUCATION

No programs are available in Guatemala for audiology training. Speech and language therapy is available as an undergraduate program in a public university.

AUDIOLOGY PRACTICE: PUBLIC VS PRIVATE

- **Public Health System**, through the Social Security: offers diagnostic services through contracts with private practitioners. Hearing aids are given to children who completed their diagnostic tests before age five and whose parents are working either in private or public sector. Adults may receive hearing aids if they are prescribed before retirement and is not congenital type of loss. Hearing aids are very basic, for both children and adults. All these services are free of charge. Cochlear implants are not available through the public health services.



- **Private Sector:** As mentioned before, through the private clinics most all-audiological services are available. There are differences in prices and quality among clinics.

- **Non-profit organizations:**

Sonrisas que Escuchan / Smiles that Listen Foundation, which started in 2009. To date, it offers all services listed in the table below, except for cochlear implants.

Benemérito Comité Pro Ciegos y Sordos: is a non-profit that serves people who are blind and/or deaf. They offer educational, medical, and rehabilitation services. Within the medical services they offer the following audiological services: ABR, pure tone audiometry, tympanometry and hearing aid fitting (very basic technology).

Another program that does not offer services but instead collects money to support cochlear implantation is Ayúdame a Escuchar. It started in 2014; however, a drawback is that they do not have audiology professionals locally, so they bring an Ear, Nose, and Throat (ENT) surgeon for each surgery and an audiologist comes twice a year to MAP the implants. There are no spare parts or distributor of the brand in Guatemala.

Service	Private sector (Costs in US \$)		Approximate number of private centers offering the service	Service available in Public sector?
	Clinics A	Clinics B		
Neonatal hearing screening	15 - 60	-	3	Yes *
Pure tone / speech audiometry	20 - 35	10 - 18	14	Yes
Tympanometry	20 - 35	10 - 15	13	Yes
ABR / ASSR	340 - 200	-	8	Yes *
Hearing aids	800 - 3,500	200 - 700	14	Yes *
Cochlear implant	24,000 - 28,000	-	1	No
Vestibular diagnosis	200 - 275	-	2	Yes *
Auditory verbal therapy	20 - 30	-	1	No
Speech / language therapy	18 - 25	10 - 15	50	No

- (*) Patients are sent to private practitioners who are subcontracted by the Public Health System due to lack of personnel and equipment.
- Clinics A target medium high and high income population
- Clinics B target medium and medium low-income population; they are less equipped and usually in peripheral areas.

SERVICES OFFERED BY OTOLARYNGOLOGISTS & OTOLOGISTS

Otolaryngologists: medical and surgical care of patients with diseases and disorders that affect the ears, the respiratory and upper alimentary systems, and related structures of the head and neck:

- Larynx and Nasal Endoscopy
- Few cochlear implants
- Ear wax removal
- Endoscopic Surgery
- Head and Neck Surgery
- Pediatric Otorhinolaryngology
- Audiometry
- Tympanometry
- Snoring Treatment
- Vestibular management
- Middle ear diagnosis and treatment

Otologists: there are no otologists per se; only 4 ENTs have micro ear surgery skills. Two of them have performed cochlear and bone anchored implants; however, one of them is now retired. Two more are in the process of developing these skills.

AUDIOLOGICAL SERVICES

Service	Approximate number of private centers offering the service	Approximate # of centers in the CAPITAL CITY	Approximate # of centers in RURAL AREAS
Neonatal hearing screening	3	3	0
Pure tone / speech audiometry	14	8	6
Tympanometry	13	8	5
ABR / ASSR	8	6	2
Hearing aids	14	8	6
Cochlear implant	1	1	0
Vestibular diagnosis	2	2	0
Speech / language therapy	50	40	10
Auditory Verbal Therapy	1	1	0
Cerumen management	Countless	✓	✓
Intraoperative monitoring	1	1	0
Auditory Processing Disorders	1	1	0

These services are offered by one Audiologist, audio technicians, and neurologists, ENT, psychologists and others.

PROFESSIONALS

Professionals	Approximate number	Ratio to the population
Audiologists	1	16,000,000 : 1
Otolaryngologists	46	351,655 : 1
Micro-Ear Surgeons	3	5,400,000 : 1
Neurotologists	0	-
Speech-Language Pathologists	400	40,000 : 1
Teachers of the Deaf *	60	266,667 : 1
Hearing Aid Specialists	40	404,400 : 1

* Number of teachers with a bachelor's degree in Education of Deaf Children. There are other teachers who do not have specialized education in the field. They are not accounted for.

RESEARCH IN AUDIOLOGY

Do Hearing aids improve lives? An Impact study among low-income population in Guatemala. London School of Hygiene & Tropical Medicine, World Wide Hearing Foundation, International Centre for Evidence in Disability. December 2016.

PROFESSIONAL AND REGULATORY BODIES

There are no audiology professional organizations or regulatory agencies in Guatemala.

SCOPE OF PRACTICE AND LICENSING

There are no license requirements for audiology practitioners, because there are no regulations for audiologists or training programs. Audiology practitioners basically do what their skills allow them to.

AUDIOLOGY CHARITIES

- **Fundación Sonrisas que Escuchan / Smiles that Listen Foundation.** Started in 2009. It is basically sponsored by a private practice, Centro de Audición, CEDAF. They share infrastructure, personnel, equipment, etc.; therefore offering quality services at affordable prices. They offer: Neonatal hearing screening, Pure tone / speech audiometry, Tympanometry, ABR / ASSR, Hearing aids, ear molds, hearing aid repair, etc. Services are not given free of charge; a social worker will set the contribution fee on an individual basis.
- **Benemérito Comité Pro Ciegos y Sordos:** is a non-profit that serves people who are blind and people who are deaf. They offer educational, medical, rehab services. Within the medical services they offer the following audiological services: ABR, pure tone audiometry, tympanometry and hearing aid fitting (very basic technology).

CHALLENGES, OPPORTUNITIES AND NOTES

Challenges:

- Audiology is unknown to many professionals
- Few professionals keep up to date in diagnosis, intervention and indication of HA fitting
- Little credibility and trust in audiology centers due to poor professional training
- In general, lack of information of where to seek help
- Audiological services are centralized in few cities, therefore transportation costs are involved
- Often, elderly are not brought for intervention, since their hearing loss seems to be “age appropriate”
- Hearing loss is usually not in government`s agenda
- Few trained people in the field of audiology
- No Audiology preparation programs available
- Lack of sufficient trained professionals, opens space to unethical “humanitarian missions”
- Calibration services are unavailable
- Few comprehensive audiological services
- Paediatric Audiological diagnostics are being done by professionals of other fields
- Insufficient specialized equipment
- Diagnostic tests tend to be expensive
- High cost of the hearing aids (why?)
- User`s manual usually not in mother language
- Use of refurbished / used hearing aids without post care services

USEFUL LINKS

- **CEDAF:** <http://cedaf.com.gt>
- **Sonrisas que Escuchan:** <http://sonrisasqueescuchan.org.gt>
- **Sound Hearing 2030:** <http://soundhearing2030.org/index.php#maincontent>
- **American Academy of Audiology:** <http://www.audiology.org>
- **Christoffel Blinden Mission:** <http://www.cbm.org>
- **World Wide Hearing:** <http://www.wwhearing.org>
- **American Speech Hearing Association:** <http://www.asha.org>
- **Coalition Global Hearing Health:** <http://coalitionforglobalhearinghealth.org/>
- **Alexander Graham Bell Association:** <http://nc.agbell.org>
- **Audiology on Line:** <http://www.audiologyonline.com>
- **Let me hear:** <http://letthemhear.org>
- **Listen Foundation:** <http://www.listenfoundation.org>
- **American Board of Audiology:** <http://www.americanboardofaudiology.org>

AUTHOR INFORMATION



Dr. Patricia Castellanos de Muñoz lives and works in Guatemala. She has a Masters degree in Education of People who are Deaf from Gallaudet University and a doctorate in audiology degree from University of Florida.

She has been the CEO and Audiologist of Centro de Audición, CEDAF, since its beginnings in 1990. Since then, she has introduced high-end technology for diagnostic procedures and in hearing technology. In 2000 she started the only cochlear implant program in the country. She has conducted training courses in Guatemala and in the rest of Latin America and has been invited as guest speaker to numerous countries.

In 2009 she started Fundación Sonrisas que Escuchan (Smiles that Listen Foundation) where she acts as President. Fundación Sonrisas que Escuchan (Smiles that Listen Foundation) offers audiological services to persons under financial constraints, and is still the only foundation in Guatemala with such a mandate.

Dr. Castellanos de Muñoz has long experience at both national and international levels in university teaching, capacity building and institutional consultancy. She has proven to be a strong advocate for the development of human resources.

Email: pdemunoz@cedaf.com.gt

Tel: (205)4050-5014