

Genetic Counseling Training in the Philippines

Mercy Ygona Laurino · Carmencita David Padilla

Received: 18 July 2012 / Accepted: 21 March 2013 / Published online: 4 April 2013
© National Society of Genetic Counselors, Inc. 2013

Abstract The recently established Master of Science in Genetic Counseling (MSGC) program serves a vital role in implementing and expanding genetic counseling services in the Philippines. Currently, only eight clinical geneticists practice in the Philippines, a country of approximately 94 million people, which yields a clinical-geneticist-to-population-density ratio of 1:11,750,000. The MSGC program was created to train health care providers to become crucial members of medical genetics teams being formed to meet increasing patient and healthcare provider demands. In 2011, the Board of Regents approved our proposed curriculum at the Department of Pediatrics College of Medicine, University of the Philippines Manila. As we relate how the Philippines began its efforts to implement the program and attempted to overcome the challenges the program faced, we hope we can provide an example to those interested in creating a similar MSGC program in other low-income and middle-income countries.

Keywords Philippines · Genetic counseling training

The Philippines

A lower-middle-income country, the Philippines is an archipelago of 7,107 islands located in Southeast Asia with a total land mass of 300,000 km², and it is divided into three major island groups: Luzon, Visayas, and Mindanao. The World Health Organization 2010 country health profile survey estimates the population at approximately 93, 261,000 million people, with 49 % of the population living in urban

areas (WHO 2012). The estimated birth rate is 19.7 per 1,000 mid-year population; the life expectancy at birth is 67 years for males and 73 years for females. According to the 2008 Philippines National Demographic and Health Survey (NDHS), a typical Filipino household is composed of 4.8 persons (National Statistics Office 2009).

The ethno-linguistic and religious diversity of the Filipino people is a product of Spanish, Japanese and American occupation, as well as ongoing trading with neighboring countries in the Asia-Pacific region. There are over 100 distinct ethno-linguistic groups in the Philippines (Summer Institute of Linguistics 2012), with Filipino (or Tagalog) listed as the official language, though the majority of Filipinos also speak fluent English. Most Filipinos are Christians, with 80 % belonging to the Roman Catholic Church. Other religious groups include Muslims, Iglesia ni Cristo, and Jehovah's Witness.

Under a democratic government, the three major island groups of the Philippines are further divided into 17 regions containing 81 provinces governed by their own local government units (LGUs). These provinces are subdivided into cities, municipalities, and *barangays*, which serve as the immediate LGU for any Filipino citizen. Health insurance coverage in some form is available to 42 % of the population (National Statistics Office 2009), and the majority of the population is covered by the PhilHealth National Health Insurance program. Other available insurance providers include the Philippine Social Security System, the Government Service Insurance System, private insurance providers, and Health Maintenance Organizations.

The Current State of Genetic Counseling Services in the Philippines

While the Philippine Department of Health (DOH) has primarily focused on decreasing infectious disease rates

M. Y. Laurino (✉) · C. D. Padilla
Department of Pediatrics College of Medicine,
University of the Philippines Manila - Philippine General
Hospital, 625 Pedro Gil Street, Ermita,
Manila 1000, Philippines
e-mail: mylaurino@post.upm.edu.ph

and improving maternal and child health, there has also been an increasing interest in implementing and expanding programs pertaining to genetic services (Padilla and Cutiongco de la Paz 2012; PGC 2012). Genetic services became available in the 1980s and 1990s after a select group of physicians earned medical genetics fellowships in Australia and Canada under scholarships from the College of Medicine, University of the Philippines (UP) Manila. These trained physicians returned to the Philippines to serve as medical genetics consultants for the Philippine General Hospital (PGH) and its neighboring hospitals. In 1990, CDP spearheaded the establishment of the Medical Genetics Unit at the Department of Pediatrics College of Medicine, UP Manila. In 1999, this clinical genetic unit and its affiliated laboratory services became the Institute of Human Genetics (IHG), a component institute of the Philippines' National Institute of Health (Padilla 2008; IHG 2012). A year later, a medical genetics fellowship was offered in the Department of Pediatrics College of Medicine, UP Manila. Since the fellowship's inception, five fellows have successfully graduated (approximately 1 fellow every 2–3 years) and have pursued further training in Australia and in North America in biochemical genetics, skeletal dysplasia, and dysmorphology.

Despite the availability of this fellowship training, the number of applicants is limited and current enrollment levels cannot meet the immediate needs for the implementation and future expansion of medical genetics and of genetic counseling services in the country. The clinical-geneticist-to-population-density ratio in the Philippines is about 1: 11,750,000. These clinical geneticists and fellows currently provide genetic counseling services to patients referred for prenatal, pediatric, metabolic, neurology, and cancer consultations. The newly founded Philippine DOH National Newborn Screening program, the Birth Defects Surveillance project, and the Telegenetics Referral System have recently increased the demand for genetic counseling services (NSRC 2012; Padilla et al. 2009b; Padilla et al. 2011a). These combined factors led to the decision in 2009 to formally create a Master of Science in Genetic Counseling (MSGC) program at UP Manila (Laurino et al. 2011).

Initial Efforts and Challenges Faced in the Creation of the MSGC Program

We identified the skills needed for the Philippines' future genetic counselors by initially assessing the genetic counseling competencies and curriculum from various training programs in the United States, Canada, and Australia. A critical concern was optimizing implementation in the Philippines. Since the existing health care infrastructure in the country does not involve mid-level health care professionals (e.g.,

physician assistants, nurse practitioners), it was important to precisely determine the future role of genetic counselors in the Philippines. We addressed this in the curriculum proposal to the UP Manila Board of Regents by clearly stating the scope of practice for the profession of genetic counseling and their role in the access and delivery of clinical medical genetics.

Specifically, graduates of the MSGC program would work closely with one of the Philippines' medical geneticists while providing genetic counseling services and would be highly involved as faculty and/or clinical preceptors for the MSGC program. Genetic counselors are also urgently needed to fill new counseling positions in the public health system (e.g., Newborn Screening Centers) and eventually in specialty clinics (e.g., cancer, neurology). The MSGC curriculum was also designed to prepare the Philippines' genetic counselors to serve a vital role in public health, which we achieved by incorporating public health courses such as health policy, biostatistics, and epidemiology as part of the MSGC curriculum (IHG 2012).

Established training programs in developed countries typically devote an entire semester or quarter to a specific topic (e.g., cancer genetics, neurogenetics). Currently, these topics are not available as part of the Philippines' MSGC curriculum as an entire course, but they are included as a module in our Genetics 201 course. A barrier during the program's development proved to be the limited availability of trained genetic professionals who could serve as faculty. We surmounted this barrier by interviewing faculty members at UP Manila and UP Diliman to determine if the content of their existing courses was applicable for the MSGC program, culminating in a curriculum created with inputs from various public health, epidemiology, biostatistics, medical anthropology, and bioethics faculty members. In hindsight, the choice to use existing graduate-level courses provided additional support that helped successfully establish the MSGC program. In addition to our Philippines-based clinical and molecular geneticists, a genetic epidemiologist and genetic counselors based in the United States have joined the faculty roster.

Master of Science in Genetic Counseling Program

In January 2011, the Board of Regents at UP Manila approved our proposed curriculum in the Department of Pediatrics College of Medicine for the MSGC program. Students admitted are graduates of recognized institutions of higher education holding at least a baccalaureate degree. Prerequisites include the completion of undergraduate degrees in fields such as nursing, biology, chemistry, psychology, or related disciplines. To date, the program has accepted two student cohorts with backgrounds in nursing, medicine, psychology, biology, molecular biology,

education, etc. (IHG 2012), who all share a commitment and passion for fully integrating the field of genetic counseling into public health care services in the Philippines. Medical genetics fellows trained in the Philippines are now also required to concurrently obtain their MSGC degree while completing their fellowship training. Scholarships (tuition, stipend, book allowances, etc.) are available for full-time MSGC students, funded by the Newborn Screening Reference Center (NSRC) and the Newborn Screening Centers. Also, ten scholarships from the Philippine Department of Science and Technology (DOST) are currently available. These scholarships will be critical particularly for students from the provinces who need to resign or take a leave from their jobs while pursuing their MSGC degrees. Lastly, five UP staff members have been able to pursue their MSGC as part of the study benefits from the university.

The initial recruitment of the pioneering genetic counseling students was strategically focused in Manila, with the intention that some graduates will later serve as MSGC program faculty. To develop a nationwide recruitment program, the DOST *Balik Scientist* program funded a nationwide lecture series on the importance of genetic counseling and the availability of the MSGC program (Balik Scientist 2012). From June to September 2012, 10 lectures were given by MYL at private and public universities (2 in Northern Luzon, 2 in Manila, 4 in Visayas, and 2 in Northern Mindanao); these lectures reached an audience of over 2,000 students, faculty members, and community providers.

The MSGC clinical training rotations occur at prenatal, cancer, general pediatric, metabolic, and in-patient clinics at PGH, the University Hospital with 1,500 beds and an annual patient census of 500 to 600,000 (PGH 2012). In addition to completing didactic coursework and clinical rotations, MSGC students are expected to earn a “pass” grade on a written comprehensive examination, submit a logbook documenting at least 40 genetic counseling cases, and complete a thesis research project (IHG 2012). Graduates of the MSGC program will be given opportunities for additional overseas exposure — the first batch of graduates is already scheduled to visit genetic counseling programs in the US and in Australia.

As part of the endeavor to establish international collaboration, a memorandum of agreement for a joint partnership with Stanford University’s MS in Human Genetics and Genetic Counseling as “sister programs” has been approved (Ormond et. al. 2012). This partnership increases MSGC students’ awareness of genetic counseling services abroad, including medical, psychosocial, and cultural issues that arise in clinical genetics. For example, MSGC students learn about differences between the United States and the Philippines in access to genetic services, such as the availability of options to pursue genetic testing and clinical services for legally terminating pregnancies. Another example is the differences in the availability of advanced genetic

testing modalities (i.e., exome sequencing) as tools for patients in identifying family mutations as inputs for counseling. These joint conferences enhance both programs in consideration of the differences in the practice of counseling in these two countries.

The first graduate cohort will be hired to join the genetics team at IHG. Their inclusion in the Genetics Clinical Team, as well as in the Newborn Screening Follow-up Centers, will enhance the practice of genetic counseling in the Philippines.

Professional Status of Genetic Counselors in the Philippines

The priority for the Philippines’ pioneer genetic counselors is for some of them to serve as MSGC program faculty members and clinical preceptors at UP Manila. This will allow an increased number of students to be admitted each academic year and will help take advantage of current nationwide efforts to attract trainees. As part of the plan to integrate genetic counseling into the public health system, at least 81 job positions (one per province) are now available as part of the Philippine DOH National Newborn Screening program and the Birth Defects Surveillance project. These genetic counseling positions are in response to the articles stipulated in the Newborn Screening Act of 2004, also known as the Republic Act No. 9288 (NSRC 2012). As part of the implementation of the expanded newborn screening program, 17 follow-up centers will be established by July 2013 in each of the 17 regions of the country and will be manned by a part-time pediatrician and by at least one full-time genetic counselor and/or nurse. In preparation, the DOH and NSRC are creating a job title for genetic counselors under the umbrella of the Philippine DOH health services system. In the future, graduates of the MSGC program will establish the Philippine National Society of Genetic Counselors for professional development and continuing education and will also publish genetic counseling practice guidelines that address the bioethical, religious, and socio-cultural needs of Filipino patients, their families, and the nation as a whole.

Conclusion

The successful establishment of the Master of Science in Genetic Counseling program at the University of the Philippines Manila provides an example of how a low-income and middle-income country can create and implement a genetic counseling training program. The first cohort of MSGC graduates will join the genetics team at the Institute of Human Genetics. Faced with numerous

advocacy tasks, the Philippines' pioneering genetic counselors have an integral responsibility in the expansion of the training program and the provision of genetic counseling services throughout the country.

Acknowledgments The authors would like to thank the Philippines' clinical and research geneticists: Eva Maria Cutiongco-de la Paz, MD, Conchita Abarquez, MD, Mary Ann Chiong, MD, Barbra Cavan, MD, Melanie Alcausin, MD, Catherine Lynn Silao, MD, April Grace Dion, MD, Sylvia Estrada, MD, as well as the current medical genetics fellows: Mary Ann Abacan, MD and Melissa Baluyot, MD. Your commitment to improve the health of the Filipino people is extraordinary. We would also like to thank our international colleagues, Ellen Regalado, MS CGC and Regie Lyn Santos-Cortez, MD for providing valuable inputs during the MSGC curriculum development. Mercy Ygonia Laurino is a 2012 grant recipient of the Philippine Department of Science and Technology *Balik Scientist* Program.

References

- Balik Scientist (2012). Philippine Department of Science and Technology *Balik Scientist* Program. Accessed October 1, 2012, from <http://202.90.141.7/bsp/>
- IHG (2012). University of the Philippines Manila Institute of Human Genetics-National Institute of Health. Accessed June 12, 2012, from <http://ihg.upm.edu.ph/>.
- Laurino, M. Y., Padilla, C. D., Alcausin, M. M. B., Silao, C. L. T. C.-d., & la Paz, E. M. (2011). A Master of Science in Genetic Counseling Program in the Philippines. *Acta Medica Philippina*, 45(4), 7–9.
- National Statistics Office (NSO) (Philippines), and ICF Macro. (2009). *National demographic and health survey 2008*. Calverton: National Statistics Office and ICF Macro.
- NSRC (2012). Newborn screening reference center. Accessed June 23, 2012, from <http://www.newbornscreening.ph/>
- Ormond, K., Hudgins, L., Laurino, M., Alcausin, M., & Padilla, C. D. (2012). A new “Sister Genetic Counseling Program” partnership between Stanford University and the University of the Philippines, Manila. *Perspectives in Genet Counsel*, 34(1), 22–24.
- Padilla, C. D. (2008). Overview of genetic services at UP Manila. *Acta Medica Philippina*, 42(2), 7–10.
- Padilla, C. D., & Cutiongco-de la Paz, E. M. (2012). Genetic services and testing in the Philippines. *J Community Genetics* DOI. doi:10.1007/s12687-012-0104-2.
- Padilla, C. D., Basilio, J. A., & Oliveros, Y. E. (2009). Newborn screening: research to policy. *Acta Medica Philippina*, 43(2), 6–14.
- Padilla, C. D., de la Paz, E. M. C., Cavan, B. C., et al. (2011). Establishment of the Philippines birth defects surveillance. *Acta Med Philip*, 45(4), 12–19.
- PGC (2012). Philippine Genome Center. Accessed June 12, 2012, from <http://pgc.up.edu.ph>.
- PGH (2012). Philippine General Hospital Accessed October 6, 2012, from www.pgh.gov.ph.
- Summer Institute of Linguistics (2012). Accessed October 1, 2012, from http://www.etnologue.com/show_country.asp?name=PH.
- WHO (2012). World Health Organization. Accessed October 1, 2012, from <http://www.who.int/gho/countries/phl.pdf>

For more information on the MSGC program, please contact:
 Carmencita David Padilla, MD MAHPS
 Email: cdpadilla@post.upm.edu.ph
 Mercy Laurino, MS LGC
 Email: mylaurino@post.upm.edu.ph
 Department of Pediatrics
 College of Medicine and Philippine General Hospital
 University of the Philippines Manila
 625 Pedro Gil Street, Ermita, Manila 1000 Philippines
 Telephone: +632 307-0780
 National Graduate Office for the Health Sciences, University of the Philippines Manila
 Phone: (+632) 526-5870; 523-1495
 Fax: (+632) 523-1498
 Email: ngohs@post.upm.edu.ph
 Website: www.ngohs.upm.edu.ph

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.