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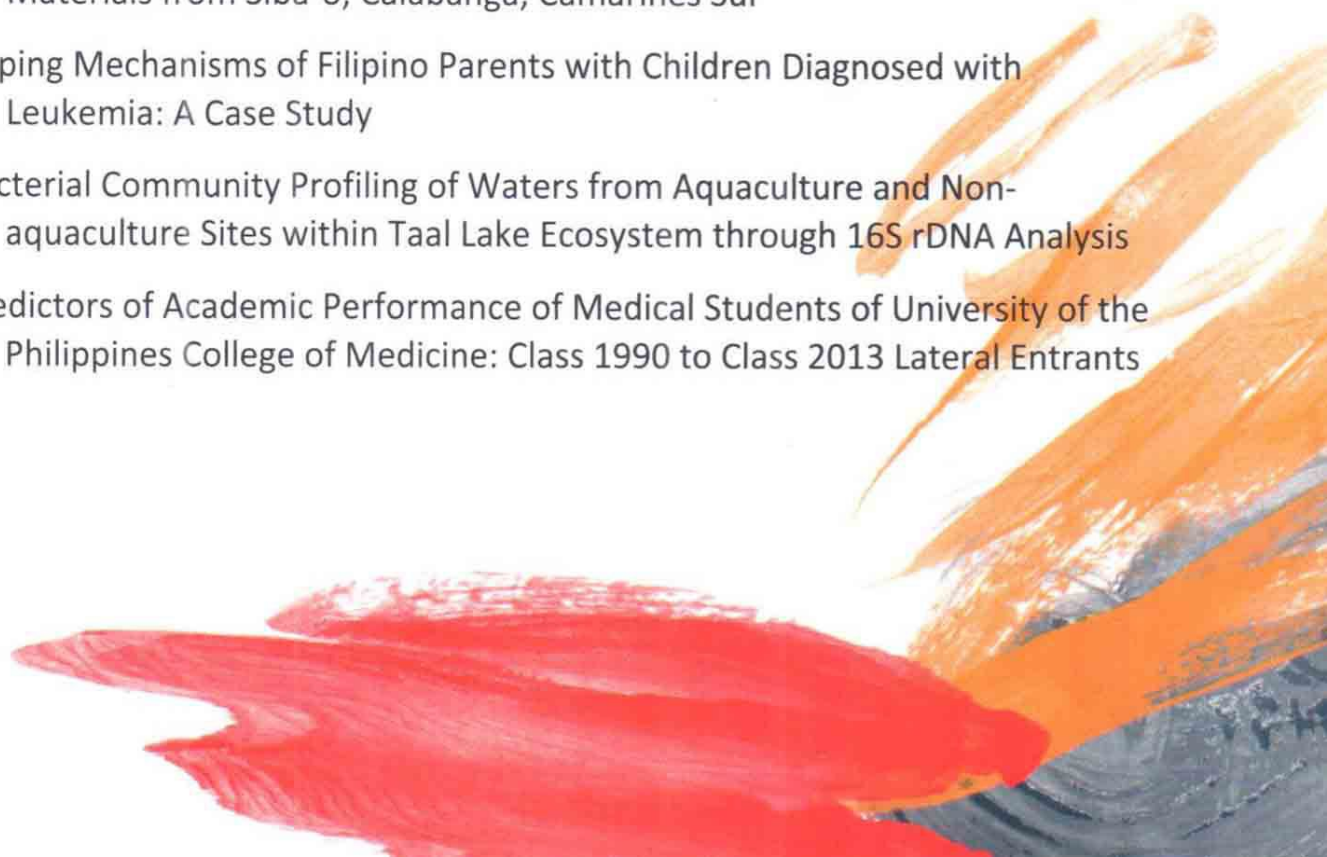
REGULAR ARTICLES



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Regular Articles

Acoustic Parameters of Perceptually Normal Voice Production in Filipinos: An Exploratory Study Among Selected Adults in Metro Manila

Jocelyn Christina B. Marzan*, Howell Henrian G. Bayona

*Corresponding author's email address: jbmarzan@up.edu.ph

Department of Speech Pathology, College of Allied Medical Professions, University of the Philippines Manila, Manila, Philippines

RESEARCH ARTICLE

Abstract

Background and Objectives: Acoustic analysis is an objective instrumental method that makes more accurate and reliable assessments of vocal characteristics possible. The aim of the current study was to describe the vocal characteristics of Filipinos with perceptually normal voices in terms of (1) fundamental frequency, (2) intensity, (3) frequency and intensity perturbations, (4) speaking fundamental frequency range, and (5) nasalance.

Methodology: A total of 142 healthy adults aged 18 – 53 years participated in this study. The group was composed of 73 men (26.9 ± 6.4 years old) and 69 women (26.1 ± 6.5 years old). Voice samples were collected using Computerized Speech Laboratory™ (CSL; Model 4300B) during sustained phonation of vowel /a/ and spontaneous speech. Nasometer™ (Model 6200-3) was used to assess nasality while participants read plosive- and sibilant-loaded sentences.

Results and Conclusion: The average acoustic values for males were F_0 = 125.8 ± 23.4 Hz, SF_0 = 122.6 ± 15.6 Hz, SF_0 range = 85.8-269 Hz, SPL (speech) = 58.6 ± 5.3 dB, SPL (vowel) = 66.6 ± 6.2 dB, jitter = 0.92 ± 0.48%, shimmer = 2.21 ± 0.73%, nasalance = 12.5-17.1%; for females, F_0 = 196.3 ± 23.0 Hz, SF_0 = 194.8 ± 19.0 Hz, SF_0 range = 97.1-309.6Hz, SPL (speech) = 57.6 ± 4.3 dB, SPL (vowel) = 65.3 ± 4.5 dB, jitter = 1.12 ± 0.34%, shimmer = 2.7 ± 0.64%, nasalance = 13.1-19.1%. Significant differences were found between male and female subjects for F_0, SF_0, perturbation measures, and SPL during sustained phonation ($p < 0.05$). Acoustic data obtained also appear to be consistent with the results of local and international studies. While these can be used as tentative normative data for Filipinos, it is recommended that future studies be completed with more systematic analysis procedures and stringent participant selection to ensure balance for age, sex, and vocal history among subgroups.

Keywords: *voice, acoustic measures, jitter, shimmer, nasality, Filipino*

Introduction

Overall voice quality is usually described through subjective or perceptual observations. While this appears to be the most convenient approach often utilized by speech pathologists engaged in clinical practice, its reliability is influenced by standardization issues and subjective ratings. In contrast, acoustic analysis is an objective instrumental method that makes more accurate and reliable assessments of vocal characteristics possible [1]. Acoustic analysis may also aid in recognizing a vocal pathology or in monitoring changes in vocal function over time. In treatment, objective acoustic measurements can also be used to improve a client's awareness of his vocal behaviors (i.e. biofeedback) or to document progress.

Objective measurements significantly differ across cultures and gender due to linguistic, dialectal, and physiological factors [2,3]. Mandarin Chinese speakers showed higher fundamental frequencies than their Caucasian and African-American counterparts, while Hindi Indian speakers were found to have the highest shimmer values [3]. Thus, normative data need to be culturally-valid and developed locally. In the Philippine setting, published work regarding objective voice measurements is very limited. A pilot study by Delovino, Casile, and Hawson [4] attempted to provide baseline data for vocal acoustic measures involving 70 participants with no voice complaints. They acknowledged that additional data taken from the same population would be helpful to corroborate their findings.

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Herbal Therapies for Women's Health in Indigenous *Atis* of Brgy. Sta. Barbara, Iba, Zambales

Maria Stephanie Fay S. Cagayan[1,2]*, Isidro C. Sia[2], Aubrey B. Manzo[3], Dewayne Jay M. Hafalia[3], Leah Rizza A. Dando[3], Lizza May H. Nava[3]

*Corresponding author's email address: faye_cagayan2002@yahoo.com

[1]*Department of Obstetrics and Gynecology, University of the Philippines Manila, Pedro Gil Manila*
[2]*Department of Pharmacology and Toxicology, University of the Philippines Manila, Pedro Gil Manila*
[3]*National Drug Information Center*

RESEARCH ARTICLE

Abstract

Background: Cultural traditions in many rural areas of Southeast Asia form the core of women's primary health care. Women are the most frequent users of complementary and alternative medicine and herbal preparations, particularly, traditional herbal therapies for reproductive health. The *Atis* (Negrito people) are one of the many ethnic groups in the Philippines who are recognized as having good knowledge of traditional medicine.
Objective: This study aimed to document existing traditional practices on the use of herbs of women belonging to the *Sambal Tina Ati* indigenous group.
Methods: Data gathering was done through observations and interviews with key informants, such as traditional healers, *barangay* health workers, and community members. Focus group discussions were conducted for validation and clarification of beliefs, knowledge, and practices of the participants. Sample medicinal plants were measured and taken for proper identification.
Results: Five traditional healers, 4 *barangay* health workers, and 11 community members were interviewed. Seven plants were identified and used for various women's health problems such as *Artemisia vulgaris L.* and *Mimosa pudica* for menstrual disorders, *Capsicum annuum L.* for labor induction, *Tradescantia spathacea*, *Blumea balsamifera* (Linn.), and *Musa Textilis* for postpartum relapse as well as *Moringa oleifera* for lactation. Commonly used plant preparations included decoction, infusion, and oil extract.
Conclusion: The research demonstrated that the traditional knowledge and practices in indigenous cultures are still present and thriving. It also showed the diversity of medicinal plants used by the *Ati* women. Age, educational level, and number of children affect knowledge and use of phytotherapies.

Keywords: *traditional medicine, women's health practices, phytotherapies*

Introduction

The World Health Organization World Health Report on primary health care recognizes utilization of traditional medicine as one strategy a country can adopt in reducing the gap between the rich and the poor in terms of accessibility to health care and improving health outcomes. Traditional and complementary medicines are found in countries worldwide, yet, their importance remains underestimated [1]. In Southeast Asia, cultural traditions on the use of plants form the majority of indigenous women's primary health care, especially in rural areas. Women are the most frequent practitioners of Complementary and Alternative Medicine (CAM) [1,2]. Herbal preparations for reproductive health are numerous in the region as recorded in previous studies on ethnopharmacology [2,3,4,5].

The Philippines is one of the richest countries in terms of cultural diversity, as well as biodiversity [6]. There are 110 indigenous communities and more than 185 ethno linguistic groups in the country. Each indigenous or local community possesses a unique body of traditional knowledge and practices which have been developed throughout centuries of use and passed down to succeeding generations. This information base continuously evolves, adapting to changes in a community's culture and environment. It also includes the people's wealth of knowledge in health and healing [6,7,8]. The *Ati* (Negrito people), one of the many ethnic groups in the Philippines who are known hunters and gatherers of forest products, are particularly recognized as having good knowledge of traditional medicine [9]. *Ati* traditional medicines are being practiced both by women within the group and by non-*Ati* locals who patronize

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Effect of a Self-Designed Educational Material on the Knowledge of Parents on Diarrhea

Robertson D. Rivera*[1], Joyce Katherine P. Cotas[1], Cynthia Isabel R. Jimenez[1], Christine Aileen C. Benosa[2]

*Corresponding author's email address: rdrivera5@up.edu.ph

[1]*College of Pharmacy, University of the Philippines Manila*
[2]*Young Pharmacists Group Philippines, NCR, Philippines*

RESEARCH ARTICLE

Abstract

Background: Diarrhea is an easily preventable and treatable disease but it remains one of the leading causes of child mortalities. Common misconceptions on diarrhea are also prevalent which can lead to fatalities. The pharmacist, as one of the most readily accessible healthcare professional in the community, can educate patients through counseling, or through printed materials to empower them to practice rational self-care.
Objective: The objectives of this study were to create a printed material for parents and to determine its effect on their knowledge on diarrhea.
Methods: Multimethod expansion design was utilized in the study and involved both qualitative and quantitative phase. The qualitative phase was used for the educational material development and involved purposive sampling of healthcare professionals. The quantitative phase which is a pre- and post-test design at one-time point involved convenience sampling (n=252) and included respondents from Indang, Bailen, Alfonso, and Mendez in Cavite, Philippines.
Results: The educational material obtained a suitability assessment of material (SAM) score of greater than 70% indicating that it is superior in terms of SAM parameters. Analyses of pre- and post-test scores were conducted at 90% confidence level, α=0.10 using Wilcoxon signed rank sum test. Results showed that the educational material significantly increased the knowledge of parents on diarrhea with regard to its causes, assessment, management, and prevention ($p=0.000$; $p<0.10$).
Conclusion: The educational material has an effect on the knowledge of parents/guardians on diarrhea. Nevertheless, care should be observed in interpreting the results as confounders were not addressed in the study. It is recommended to determine the retention of knowledge at multiple time points.

Keywords: *Educational material, diarrhea, knowledge, suitability assessment of material*

Introduction

Diarrhea is considered an easily preventable and treatable disease. However, it remains one of the major public health concerns for both developed and developing countries. According to the WHO (2009), 1.7 billion people are affected by diarrhea and it accounts for 1 in 9 child deaths worldwide [1]. Every day, 2,195 children die daily from diarrhea - more than AIDS, malaria, and measles combined and more than half of these cases are in Africa and Southeast Asia [2,3]. In the Philippines, the Department of Health (2010) reported that diarrhea is the second leading cause of death in children under the age of five as it may cause not only dehydration but also potentially lethal electrolyte imbalances [4,5].

With the alarming incidence and mortality rate of diarrheal cases, the risk of self-medication similarly increases. Self-medication is a growing public health concern because of potential drug misuse and abuse [6]. In a study conducted in a rural area in the Philippines regarding the common choice of therapy for childhood diarrhea, 40% resorted to self-medication wherein the major source of information is their family. Only 17% of the childhood cases were professionally consulted in hospitals or health centers. The following were the most

In Vitro Mammalian Alpha-glucosidase Inhibitor Screening of Selected Plant Materials from Siba-o, Calabanga, Camarines Sur

Edmark C. Kamantigue[1], Judilynn S. Solidum[1], Noel S. Quiming[2]*, Marilou G. Nicolas[2] and Switzale M. Pidlaon[3]

*Corresponding author's email address: noel_quiming@yahoo.com

[1]*Department of Pharmaceutical Chemistry, College of Pharmacy, University of the Philippines Manila*
[2]*Department of Mathematics and Physical Science, College of Art and Science, University of the Philippines Manila*
[3]*College of Medicine, University of the Philippines Manila*

RESEARCH ARTICLE

Abstract

Background and Objectives: Diabetes mellitus type 2 (DM2) remains a health threat to Filipinos. According to the International Diabetes Federation 2014, the Philippines is one of the emerging DM2 hotspots with an estimated prevalence rate of around 3.2 million cases (5.9%) between 20 to 79 years old. In line with the acceptance of Filipino patients with the utilization of herbal medicine as an effective alternative for treatment of their ailments, some of the selected plant materials from Siba-o, Calabanga, Camarines Sur were explored for mammalian intestinal alpha-glucosidase inhibition *in vitro* to develop new herbal drug candidates that are effective, safe, and more affordable.

Methodology: Exhaustive maceration using absolute ethanol was performed to extract the phytoconstituents from the plant matrix. *In vitro* alpha-glucosidase inhibition assay using spectroscopic method (96 well plates) was carried out to analyze the mammalian α-glucosidase inhibition of the different plant samples, IC_{50} was determined from the generated linear regression extrapolated from concentrations-% inhibitions plot. Thin Layer Chromatography (TLC) bioautography was employed to identify the presence of flavonoids, tannins, essential oil, reducing sugar, coumarin, anthraquinones, anthrones, steroids, alkaloids, and peptides.

Results: From the 98 crude plant samples extracted, the ethanolic extracts of *Melothria sp.* stem with leaves showed a concentration-dependent inhibition activity towards mammalian α-glucosidase from rat intestine acetone powder with IC_{50} values of 49.24 ppm. Tannins, flavonoids, essential oils, and indoles were detected from TLC bioautography that may be responsible for the bioactivity.

Conclusions and Recommendations: The results demonstrated the potential utilization of some plant samples as an alternative herbal drug. However, only *Melothria sp.* crude leaves and stem extract (SB32LS) showed a concentration-dependent activity and further studies must be done to isolate the metabolites responsible for the activity through activity-guided isolation.

Keywords: *Type 2 diabetes mellitus, mammalian α-glucosidase inhibition, Melothria sp., Siba-o, Calabanga, Camarines Sur*

Introduction

Diabetes mellitus is a group of metabolic syndromes characterized by absolute or relative deficiencies in insulin release and is associated with chronic hyperglycemia which can lead to macrovascular, microvascular, and neuropathic disorder [1,2]. The prevalence, medication cost, and disabling complications, such as stroke, amputation, blindness, and end-stage kidney caused by type 2 diabetes are threats to human health [3,4]. According to the International Diabetes Federation 2014, the estimated prevalence of DM2 in the Philippines was 3.2 million cases with 5.9% prevalence rate between 20 to 79 years old [5]. Therefore, it is essential for early DM treatment and reduction of chronic complications development to control post-prandial plasma glucose level. Inhibitors of α-glucosidase, such as acarbose, miglitol, and voglibose are oral therapeutic agents that delay the complex carbohydrates digestion by inhibiting polysaccharide digesting enzymes including pancreatic α- amylase and α-glucosidase. These commercial drugs effectively display antihyperglycemic activity. However, the utilization of the mentioned agents are limited due to gastrointestinal side effects, such as vomiting,

Bacterial Community Profiling of Waters from Aquaculture and Non-aquaculture Sites within Taal Lake Ecosystem through 16S rDNA Analysis

Leslie Michelle M. Dalmacio[1], Marilen P. Balolong[2], Rachelle C. Ramilo[1], John Harvey M. Beza[1] and Arnold V. Hallare*[1]

*Corresponding author's email address: lmdalmacio@up.edu.ph

[1]*Department of Biochemistry and Molecular Biology, College of Medicine, University of the Philippines Manila*
[2]*Department of Biology, College of Arts and Sciences, University of the Philippines Manila*

RESEARCH ARTICLE

Abstract

Background and Objectives: Inland water microbial communities are key players in the biogeochemical processes. However, many inland waters become polluted due to various anthropogenic practices. To determine the impact of aquaculture on microbial diversity in a lake ecosystem, the study determined and compared the bacterial composition of waters in aquaculture and non-aquaculture sites in Taal Lake using molecular techniques.

Methodology: Microbial DNA was extracted using the cetyl trimethylammonium bromide (CTAB) method. The DNA isolates were used as template for the amplification of bacterial 16S rDNA through nested polymerase chain reaction (PCR). The amplified 16S rDNA hypervariable regions were subjected to denaturing gradient gel electrophoresis (DGGE) for bacterial community profiling. Excised DGGE bands were sequenced and identified through BLAST analysis.

Results and Conclusion: The generated Dice similarity coefficient of 18.20 indicated low bacterial community similarity between aquaculture and non-aquaculture waters. This implies that the change in physicochemical parameters in aquaculture waters may cause a shift in the bacterial community composition allowing different bacterial populations to dominate in one site relative to the other site. Taal Lake aquaculture waters were found to harbor bacteria under the Proteobacteria and Actinobacteria groups, while non-aquaculture waters contained bacteria that are members of Proteobacteria, Actinobacteria, and Firmicutes. The presence of clinically-associated bacterial strains in both aquaculture and non-aquaculture sites in Taal Lake poses a risk to fish and human health.

Keywords: *Taal Lake, bacterial community, aquaculture, non-aquaculture, 16S rDNA, DGGE*

Introduction

All inland waters are dominated by microorganisms that play key roles in biogeochemical processes essential for cycling of nutrients, breakdown of organic matter, and even in controlling the water quality of aquatic habitats. Furthermore, bacteria usually represent more than 90% of the microorganisms in non-extreme or freshwater aquatic habitats [1].

The bacterial community composition (BCC) of lakes varies temporally and spatially within habitats, as well as between habitats. Ecological factors shaping BCC include water chemistry, water temperature, metazooplankton predation, protistan predation, phytoplankton composition, organic matter supply, intensity of ultraviolet radiation, habitat size, and water retention time [1-3]. Although it is well known that these factors shape the overall BCC, little is known about the factors specifically shaping the dynamics of particular populations of freshwater bacteria.

Aquatic ecosystems, such as lakes, are incessantly subjected to disturbances that do not only change the physical environment but also the living components such as the bacterial communities within them. Disturbances in lakes may be naturally occurring in the environment, like

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Predictors of Academic Performance of Medical Students of University of the Philippines College of Medicine: Class 1990 to Class 2013 Lateral Entrants

Carlo G. Catabijan [1]*, Sharon D. Ignacio [2], and Johanna Patricia A. Canal [3]

*Corresponding author's email address: cdcatabijan@up.edu.ph

[1]*Department of Biochemistry and Molecular Biochemistry, College of Medicine, University of the Philippines Manila, Ermita, Manila 1000*
[2]*Department of Rehabilitation Medicine, College of Medicine, University of the Philippines Manila, Ermita, Manila 1000*
[3]*Department of Radiology, College of Medicine, University of the Philippines Manila, Ermita, Manila 1000*

RESEARCH ARTICLE

Abstract

Background: The criteria for admission at the University of the Philippines College of Medicine (UPCM) are 60 percent premed general weighted average grade (%PMGWAG), 30 percent National Medical Admission Test (NMAT) scores and 10 percent Interview Scores. Through the years, because of the highly competitive nature of the selection process, the admissions cut-offs in PMGWAG and average NMAT have continuously risen.
Objectives: This study covering a 24 year period aimed to determine the correlation and predictive value between the admissions criteria (%PMGWAG, NMAT, and Interview Score) with academic performance parameters (Percent Medical General Weighted Average Grade or %MGWAG and Class Ranking) and Board Rating.
Methods: The pre-admission and academic records of accepted lateral entrants from Class 1990 to Class 2013 were retrieved, reviewed and analyzed. These included the pre-med GWAG (%PMGWAG), NMAT and Interview Scores, Med GWAG (%MGWAG), Class Ranking and Board Rating. Pearsons Correlation and Multiple Linear regression analysis were done.
Results: All criteria (%PMGWAG, NMAT, Interview Score) for admissions were correlated with the academic performance parameters (%MGWAG, Class Rank) and Board Rating. The strongest correlation was observed in %PMGWAG with %MGWAG and Class Rank. Interview score correlated weakly with the academic performance. Strong correlations between %MGWAG, Class Rank, and Board Rating were likewise observed. Rank upon admission also correlated strongly with Class Rank upon graduation. On linear regression analysis, %PMGWAG and NMAT were more predictive of %MGWAG, Class Rank and Board Rating.
Conclusion: The weight distribution of the different admissions criteria should be adjusted accordingly. Interview score, a weak predictor of academic performance and a measure of non-cognitive traits, should be treated separately and independently as an admission criterion.

Keywords: *medical college admission, admissions criteria, medical education, academic performance, UP College of Medicine*

Introduction

Annually, almost a thousand candidates apply for admission into the University of the Philippines College of Medicine (UPCM). Among these applicants, only 120 lateral entrants are accepted. They join the ranks of 40 direct entrants from the College's Intarmed Program to form a class of 160 in Learning Unit III, the equivalent of first year of medical school in other colleges. Given the massive volume of aspiring applicants and, in contrast, the very small number of students who can be accepted, there is a need to assess how well the entrants perform in medical school. This volume compared to placements available has been cited as one of the essential reasons for having a selection procedure for medical students worldwide. The second reason being the social and professional desire to admit students who will become competent and ethical practitioners [1].

Lateral entrants of the UPCM are baccalaureate degree graduates. This is as opposed to direct entrants who are high school graduates. Direct entrants are thus screened and selected based on their performance on the UPCAT and high school academic grades, which are measured as University Predicted Grades. For the lateral entrants, current admission