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Jordanian Doctors' Perspectives on Biochemistry and Genetics

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Abstract

According to a number of researches, doctors tend to harbor unfavorable views of the fields of genetics and biochemistry. A lot of medical schools use a system-based integrated curriculum that is augmented by clinical linkages. Jordan's medical schools transitioned to an integrated curriculum, but there aren't any studies that assess how doctors feel about biochemistry and genetics.

The purpose of this study was to assess how doctors feel about biochemistry and genetics, as well as how well their academic training aligns with clinical practise.

Materials and Methods: A structured questionnaire with 40 statements was given to a sample of 616 doctors working in Jordan's government and private hospitals at random. Participants were interns, residents, or specialists who received their MD or MBBS from Jordan or other nations.

Results: Although more than half of the participants indicated that biochemistry and genetics were among their least favorite courses and academically demanding, many of them were familiar with certain recent advancements in these fields and their potential for translation. Most participants agreed that changing the medical school curriculum to incorporate biochemical and genetic principles with clinical instruction will inspire students to choose careers in medicine. In univariate analysis, residents had the most optimistic views and were the most aware about the modern developments in biochemistry or genetics as well as the biochemical alterations linked to diseases. According to multivariate analysis, doctors with more than five years of experience or those working in the private sector often had a more favourable opinion of biochemistry and genetics.

Conclusion: Medical professionals in Jordan generally had favourable views of genetics and biochemistry. Residents, doctors with more than five years of experience, and doctors working in the private sector were more likely to exhibit this.

Keywords: Biochemistry; Genetics: Biochemical; Clinical practice; Clinical research

Introduction

The study of genetics and biochemistry is required in medical school. These fundamental medical sciences make an effort to explain how biological systems function at the molecular level, including a comprehension of the numerous metabolic and signaling pathways that are active within cells under diverse environmental, physiological, and pathological situations. Clarifying the fundamental mechanisms of various disease processes requires such an insight. Additionally, this information could be applied to the creation of fresh treatment approaches and the identification of fresh biomarkers that support the early recognition of diseases and/or the tracking of their course. Furthermore, these two sectors are now playing an even more significant role in contemporary medicine with the introduction of next-generation sequencing and the most recent developments in gene therapy. In fact, once-abstract ideas like Personalised medicine and pharmacokinetics are beginning to be included into accepted clinical practice [1-2].

Sadly, despite the need of having a strong foundation in genetics and biochemistry for clinical practise, numerous studies have shown that a sizable part of general medical practitioners lack proficiency in the aforementioned fields. This observation has been attributed to a number of factors, including the dull and uninteresting teaching methods used in medical schools, the fact-heavy and abstract nature of the biochemistry and genetics curricula, and the false belief held by many medical school grads that the concepts taught in biochemistry and genetics are unrelated to medical practice [3]. Collectively, these factors can occasionally cause medical school graduates to have an unfavorable attitude towards the fields of biochemistry and genetics. Interestingly, though, it seems that after receiving their first medical degree, physicians' negative perceptions begin to shift. In fact, some studies have shown that after graduation, physicians become more interested in biochemistry and genetics. However, there is a broad perception that their understanding of biochemistry and genetics should have been stronger. This finding supports the claim that a better correlation between biochemistry and genetics teaching methods and subsequent clinical teaching years and post-graduation practice/research should improve physicians' attitudes towards biochemistry and genetics [4-7].

Materials and Methods

The design of this study is cross-sectional. gynecology, pediatrics, endocrinology, and internal medicine, after appropriate ethical approvals and funding from the Deanship of Research at JUST (368/2010). A simple random sample of 510 physicians (interns, residents, and specialists) practicing in northern, central, and southern

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Jordan was identified using the above database and their ID registration numbers [8].

Based on the following criteria, 416 physicians were chosen from this list to participate in this study: obtaining the first medical degree (MD or MBBS) between 2002 and 2010; and not sitting for advanced biochemistry or genetics training following graduation, including graduate degrees (diplomas, MSc, and PhD), board certifications, or continuing medical education courses of more than six credit hours. To conduct the survey, individuals were questioned face to face by two residents from the Irbid public health residency programmer between January and July 2016. The goal of the study was told to the participants prior to completing the survey, and they then signed a consent form linked to the main page of the survey. The survey was completed by 514 physicians [9, 10].

Discussion

The molecular characterization of Tunisian barley landraces revealed that all six loci employed are polymorphic across the genotyped barley sample, allowing the discovery of 13 total alleles. There were two to three alleles per locus, with a mean of 2.16 alleles per locus. Given the haploid nature of the examined loci and the mating system of barley, the discovered variation in this study is regarded as significant. The findings support prior research that focused on chloroplast SSR diversity in the barley genome and found two to three alleles per location. The high conservation level of the chloroplast genome explains the low discovered number of alleles per locus for barley cpSSR molecular markers. Angiosperm species have substantially conserved their chloroplast genomes due to the absence of heteroplasmy and recombination, resulting in a low evolution rate when compared to nuclear genomes [11].

The genetic structural study of the germplasms analyzed indicated two major groups. Five barley cpSSRs were also used to study the genetic linkages among 186 barley accessions representing cultivated and wild germplasms that originated from the main distribution zones of this crop, with the exception of the Far East region. According to the geographical origins of the analyzed populations, the observed pattern of genetic linkages among Tunisian barley landraces demonstrated a low genetic structure. This supports the findings reported using nuclear SSR molecular markers and morphological descriptors for Tunisian barley landraces and is explained by seed exchanges between farmers from different cropping [12-14].

A median-joining network analysis of the phylogenetic relationships among the eight discovered haplotypes revealed a complex genetic linkage pattern. This study identified three common haplotypes as well as numerous minor haplotypes that may have formed over time as a result of mutation events in these major haplotypes. Indeed, the most common and shared haplotypes are thought to be the most ancient, with minor haplotypes for chloroplast SSRs emerging generally following the stepwise mutation process. It has been revealed that chloroplast genomes contain genes involved in the production of numerous agronomically significant features such as cytoplasmic male sterility, plant growth, and responsiveness to adverse environments. As a result, the ex situ conservation in gene banks of the seeds of all observed maternal lineages is of significant relevance for a future barley development plan. Furthermore, as a complementary conservation strategy, in situ conservation measures are required to allow the evolution of these valuable landraces in Tunisia's different edaphic and bioclimatic settings in order to maintain their genetic diversity. It is critical to priorities the preservation of landraces with unique and rare genes and haplotypes [15-20].

Conclusion

Jordanian doctors were generally enthusiastic about biochemistry and genetics. This was especially noticeable among trainees, physicians with more than five years of experience, and those in private practise.

Conflicts of Interest

None

Acknowledgment

None

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