

Abstract

Time Series Analysis and Forecasting of Viral Hepatitis A and Typhoid Fever in Lebanon

Nadine Haddad; J Gomes Diaz; A Paez Jimenez; N Ghosn

Corresponding Author:

Nadine Haddad

Abstract

Background: In Lebanon, population is described as either regular (Lebanese and Palestinian) or Syrian displaced (since 2013). Along with such population dynamics, two endemic diseases exhibited changes over past years: Viral Hepatitis A (VHA) and Typhoid Fever (TF). During 2008-2015, national annual rates (per 100,000) varied between 7.7-44 for VHA and 6-11.6 for TF.

Objective: The following time series analysis (TSA) aim to describe trends and seasonality of each disease and generate predictions.

Methods: Cases included in the National database of Epidemiological Surveillance Program of Ministry of Public Health were considered. Descriptive analysis using Excel was performed for each disease for 2008-2015. Weekly and monthly counts were considered for VHA and TF, respectively. Regression models were generated separately for regular and total populations. TSA models for Syrian displaced alone could not be performed as data is available for 3 years only. TSA was performed using Stata v13. Forecasting was generated for 2016.

Results: TSA models for VHA and TF show slightly decreasing trends among both regular and total populations. As of 2016W21, average observed weekly VHA rate (per 100,000) is lower than predicted among regular population (0.08 versus 0.13, respectively) and total population (0.04 versus 0.22, respectively). As for TF, observed monthly rates were higher than predicted during 3 first months of 2016 among both regular and total populations.

Conclusions: TSA model shows decreasing VHA trend among regular population, despite national outbreak of 2014. As TF also exhibit national decreasing trend, regional analysis can help understand increased monthly TF rates early 2016. Differences between observed and predicted rates should be carefully interpreted with respect to reporting completeness and timeliness, various reporting mechanisms in addition to intervention measures.

(*iproc* 2018;4(1):e10548) doi: [10.2196/10548](https://doi.org/10.2196/10548)

Edited by Y Khader; this is a non-peer-reviewed article. Submitted 29.03.18; accepted 29.03.18; published 29.03.18.

Please cite as:

Haddad N, Gomes Diaz J, Paez Jimenez A, Ghosn N

Time Series Analysis and Forecasting of Viral Hepatitis A and Typhoid Fever in Lebanon

iproc 2018;4(1):e10548

URL: <http://www.iproc.org/2018/1/e10548/>

doi: [10.2196/10548](https://doi.org/10.2196/10548)

PMID:

©Nadine Haddad, J Gomes Diaz, A Paez Jimenez, N Ghosn. Originally published in *Iproceedings* (<http://www.iproc.org>), 29.03.2018. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in *Iproceedings*, is properly cited. The complete bibliographic information, a link to the original publication on <http://www.iproc.org/>, as well as this copyright and license information must be included.