Estimation of psoriasis incidence and its dependence on latitude in Chile

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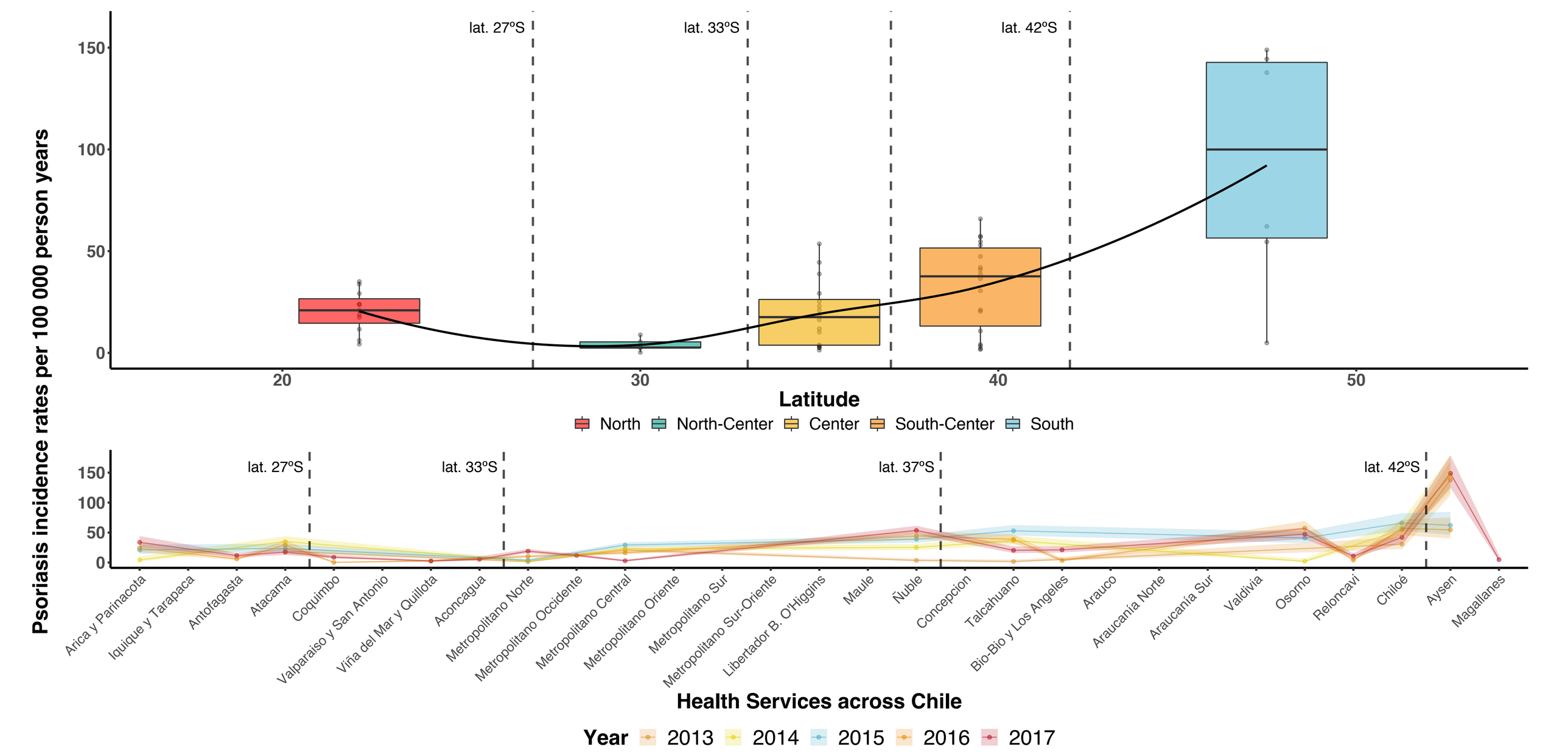

Figure 1: Psoriasis incidence rates across the Chilean latitude spectrum. The upper panel shows the trend of incidence rates with respect to latitude degrees using a locally estimated scatterplot smoothing regression. Estimates for available data of cases of both sexes were aggregated into the five main macro-adminstrative regions of Chile using the midpoint of latitude between areas. The lower panel shows total incidence rates during the period of observation of the study across the different Health Services of Chile. Shaded regions indicate 95 % confidence intervals computed using the gamma method after direct standarization of the incidence rates.

Introduction

Background: Incidence studies of psoriasis are scarce and hard to perform. In the last available systematic review about global epidemiology of psoriasis, there are mentioned just *eight* studies, coming from United States, Italy, United Kingdom, Netherlands, Algeria, Tunisia & Morocco [1]. There are not population-level reports from Latin America, which is also corroborated by a regional systematic review [2]. This lack of information is resulting in disparities in access and delivery of care in Latin America. Global initiatives are starting to cope with the problem, being the most relevant the creation of the *Global Psoriasis Atlas* [3]. Chile has ~17 million of inhabitants, and its continental latitude spectrum goes from 17°S to 53°S. Due this broad spectrum, it constitutes a natural experiment for studying the relationship between psoriasis and solar irradiance.

Objective: To estimate annual incidence rates of psoriasis at the national level in Chile during 2013-2017 and examine differences in these rates with latitude.

Methods

This was an observational ecological study using the Chilean Waiting List Repository Database (WLRD), which gathers new specialty referrals from the Public Health Trust (FONASA). We defined our study population as a dynamic population. Access to WLRD was achieved by a request to health services through Transparency Law. Cases were found through a query to the database with regular expressions. We performed direct standarization with respect to 2017-FONASA population, and confidence intervals were computed based on gamma distribution method. Analysis were carried out using `R version 3.5.2`. Since data is publicly available it was not necessary an Ethics Commitee Aproval.

Results

National coverage of WLRD ranged from 14% (2 552 083/ 17 556 817 inh.) to 38% (6 862 289/ 17 973 669 inh.) during the period of study. Throughout the years we have information coming from different services in a representative and incremental fashion with respect to the geographical and administrative distribution of the country. Incidence rates are presented in **Table 1**. Correlation of incidence rates with latitude are showed in **Figure 1**. Demographics variables are presented in **Figure 2**.

Table 1: Psoriasis incidence rates in Chile during 2013-2017

Year	Female	Male	Total
2013	16.1 (14-18.4)	15.5 (13.3-18)	15.8 (14.3-17.5)
2014	24.5 (22.1-27.1)	25.8 (23.1-28.7)	25 (23.2-26.9)
2015	31.7 (28.9-34.6)	33.8 (30.7-37.2)	32.4 (30.3-34.6)
2016	18.2 (16.7-19.8)	19.4 (17.7-21.3)	18.7 (17.6-19.9)
2017	19.3 (17.9-20.7)	19.2 (17.7-20.8)	19.2 (18.2-20.3)

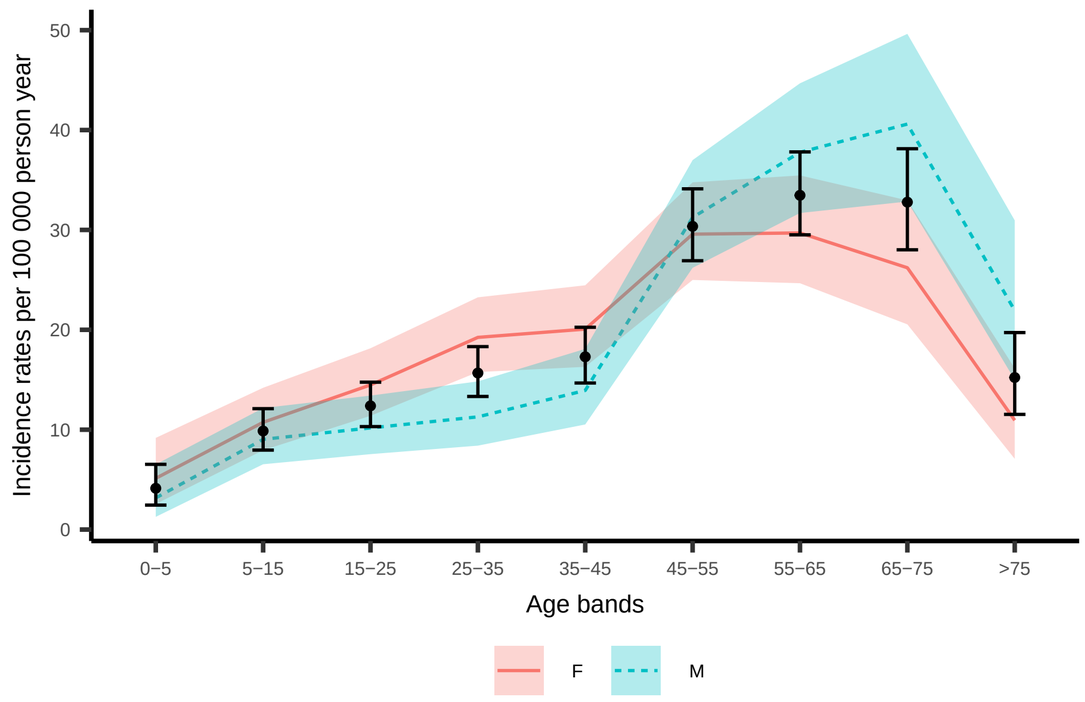

Figure 2: Incidence of psoriasis by age at diagnosis for males and female. Chile, 2017

Conclusions

Our results are the first nationwide report of incidence of psoriasis in Latin America and are in line with previous reports [4]. Chile has a mixed healthcare system and patients can go to consult to private specialists without a prior referral. Therefore, some new psoriasis cases are not being captured by the WLRD and it is possible that our work underestimates true incident rates nationally. Nevertheless, we are still able to observe the trend of correlation between latitude and psoriasis incidence. Besides enviromental factors, genetic background is involved in the etiopathogenesis of psoriasis. It could be that Chilean incidence rates are attenuated by the aymara and mapuche heritage [5]. Further work is to analyze the rates considering these relevant factors.

References

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