

Examining the Relationship Between Different Types of Water Supply and Selected Child Health Outcomes in Jordan

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Introduction

- The Jordan River Basin is one of the 405 river basins of the world. The basin is located in the center of multiple disputes, such as the Syrian Civil War and the Arab-Israeli Conflict between Israel and Palestine.
- Jordan is consistently ranked the most politically stable country of the Levant. For this reason, Jordan is a haven for refugees from Palestine, Iraq, and Syria who temporarily settle in refugee camps in the Northeast of the country.
- The Jordan River is an important source of freshwater for Jordan, Palestine, Israel, Lebanon and Syria. For Middle Eastern countries, access to water is one of the biggest issues faced due to its' arid climate.
- Jordan faces problems such as pollution, increased water salinity and excessive water pumping. In addition, climate projections point to 15-20% decrease in precipitation for the period of 2020-2030. Thus, water access affects all aspects of Jordanians' lives, specifically their health.
- Diarrhea is one of the most common illnesses. Because it is waterborne, it is spread when water for agriculture, preparing food, and drinking is contaminated. According to the WHO, diarrhea kills 2,195 children a day, more than measles, malaria and HIV combined. However, it is easily prevented with low-cost interventions such as education for mothers and vaccination for rotavirus.



Source: AP/Mohammad Hannon/File

Aim

- Determine the relationship between sources of drinking water and child diarrhea rates in households in Jordan.
- Locate refugee camps in Jordan.
- Explore refugee well-being in a water scarce region.

Method

Data Sources

Administrative and inland water shapefiles were downloaded from DIVA-GIS website.

Children's Diarrhea Rates and Sources of Drinking Water were obtained from the Demographic and Health Surveys (DHS) Program, 2012

Refugee Camp shapefiles were obtained from the Humanitarian Data Exchange website.

2012 Population Density data was acquired from the Jordanian Department of Statistics.

GIS Analysis

Two variable for households that answered "Yes, in past 24 hours" or "Yes, in the past two weeks" were recoded into the percentage of households with children who recently had diarrhea in each governorate.

These values, along with population density were mapped and were superimposed with refugee camps.

The sources of drinking water were averaged for each governorate and compared to diarrhea rates to determine correlation using SPSS.

Results

Fig 1

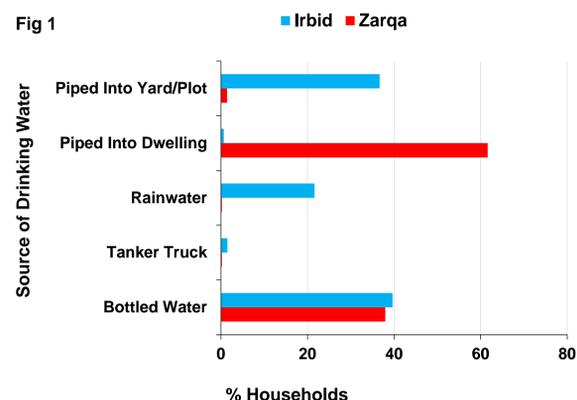


Fig. 1 shows that sources of drinking water do not have a negligible effect on children's diarrhea rates in Governorates with refugee camps.

Areas with similar levels of diarrhea cases do not have common sources of drinking water besides bottled water.

Every governorate has a significant amount of water sourced from bottled water; therefore, it does has little effect the analysis.

Results Cont.

- Contrary to the original hypothesis that sources of drinking water would play a large part in diarrhea rates, the data indicates that there is little relationship.
- Children's diarrhea rates were highest in the governorates where there are refugee camps (Fig 2 and 3).
- Cramped living quarters play a key role in disease spreading, especially those caused by contamination such as diarrhea.
- Little access to healthcare and education, along with high poverty levels are factors of refugee camps that may indicate why diarrhea levels are highest in the governorates that house them.
- Although Marfaq has refugee sites as well, it does not have as high levels of diarrhea as Irbid and Zarqa. This may be due to the development of the Zataari refugee camp into a thriving area with many refugees starting their own businesses.
- Further research on the living conditions of refugee camps would allow for additional analysis.

Conclusions

- No relationship was found between children's diarrhea rates and population density in Jordan.
- Further inquiry showed that the areas with the highest rates of children's diarrhea include refugee sites. Living conditions in the governorates with refugee sites may increase rates of diarrhea in children.
- More investigation into the living conditions of refugee camps in Jordan may find which indicator has the highest effect on diarrhea rates.
- Analysis of toilet facilities may also find a relationship with children's diarrhea rates. However, because Jordanian data is limited, especially within refugee camps, this may require additional surveying.

Results Cont.

Fig. 2 Population Density of Jordan (people/square km)

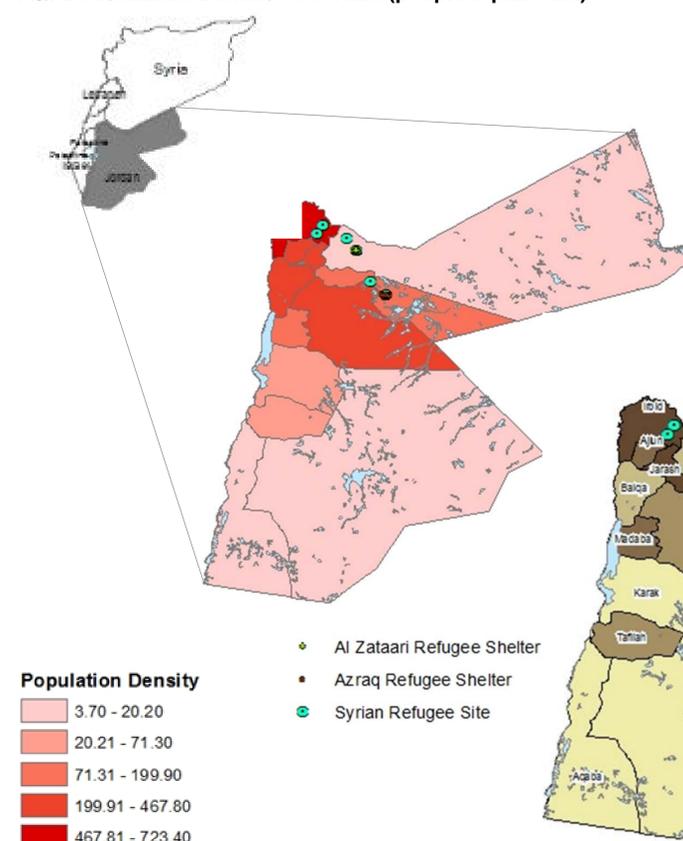
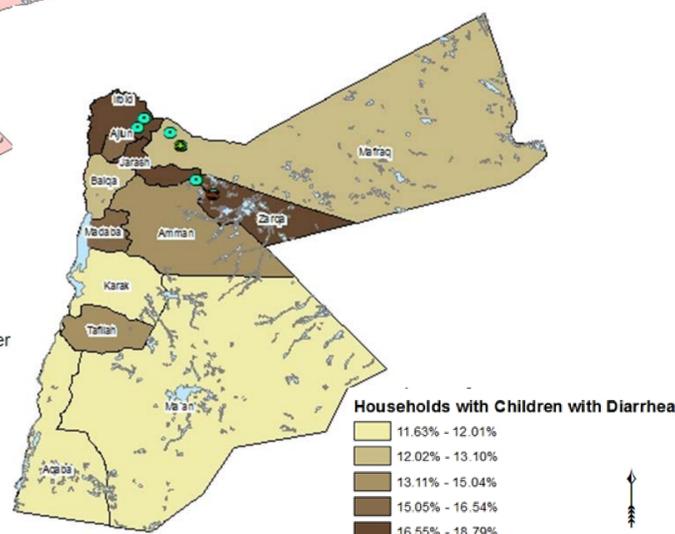


Fig. 3 Children's Diarrhea Rates



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