Issue of tuberculosis in australia

The incidence and prevalence of Tuberculosis in Australia and Peru are of greatly vast differences. This paper will discuss the terms incidence and prevalence; why Tuberculosis remains an issue in Australia; and provide rationales for differences in incidences and prevalence's taking into consideration the determinants of health.

Incidence and prevalence when describing disease epidemiology are frequently used terms, often intertwined (Advanced Renal Education Program, 2015). Incidence describes the rate of new cases of a disease, generally conveyed as the number of new cases which occur at a given point in time (Advanced Renal Education Program, 2015). The incidence rate is commonly reported as a fraction of a population at risk of developing a disease (ie: per 100 000) (World Health Organization Global Tuberculosis Programme). Whereas prevalence is articulated as a percentage of the number of cases per 100 000 (World Health Organization Global Tuberculosis Programme). Prevalence is the actual number of live cases of the disease during a period (Advanced Renal Education Program, 2015). The association between incidence and prevalence depends on the natural history of the disease being reported (Health, 2017).

Tuberculosis (TB) is one of the world's deadliest diseases, with 1/3 of the world's population infected (Centre for Disease Control and Prevention, 2017). TB is an infection caused by the bacteria Mycobacterium tuberculosis, and usually affects the lungs (Australia, 2017). However, TB may also involve the kidneys, bones, spine and brain (Australia, 2017). TB is usually spread by breathing in the bacteria after an untreated person has coughed or sneezed (Australia, 2017). Overcrowding is a defining feature of areas of high TB

endemicity (Centre for Disease Control and Prevention, 2017). Ongoing close contact between active cases and susceptible individuals is necessary to maintain endemicity in a population, however we will discuss health determinants further into this paper.

Australia has maintained a low rate of TB since the mid-1980s, however over the last 20 years TB incidence rates have steadily increased (Teo, Tay, Douglas, Krause, & Graham, 2015). Australia has recorded its highest incidence rate since 1985 in 2011 being 6. 2 per 100, 000 (Teo et al., 2015). In 2015 Australia's TB incidence was 6 per 100, 000 per the World Bank (Trade Economics, 2017). When researching the prevalence of TB in Australia World Health Organisation (WHO) publications noted TB case notifications to the value of 1 254, this being the same rate as per new and relapse cases (World Health Organization, 2015).

The incidence of TB in Peru shows a much more alarming story. Peru's TB cases were last measured in 2015 with an incidence rate of 119 per 100, 000 (World Health Organization, 2015). Research obtained from World Bank stating these incidences were recorded from new pulmonary, smear positive and extra-pulmonary tuberculosis cases (Economics, 2017). Prevalence information obtained at this time reads TB notification cases of 30 988 (World Health Organization, 2015). Total new and relapse cases registered were reported to be that of 29 833 (World Health Organization, 2015).

With Australia's TB incidence rate increasing, the question is why is this an issue now? Research shows that many of Australia's holiday destinations are teeming with TB that is now becoming resistant to drug treatment

(Dunlevey, 2015). Holiday makers such as teachers and childcare workers are reported to be travelling to TB hot-spots and many bringing the bacteria to Australian shores (Dunlevey, 2015). Research has also shown that those living in high TB prevalent countries are migrating to Australia ((AMA), 2008). With the increases in immigrants, overcrowding and malnutrition are common risk factors for the spread of TB (Australian Indigenous Health Info Net, 2015). Australia's shoreline is another factor for the increase in TB rates with Western Province of Papua New Guinea and Torres Strait Islands having recorded active strains of Multi-drug resistant strains of TB ((AMA), 2008).

TB remains to be a social disease that is inextricably linked to vicious cycles of poverty (Wingfield et al., 2016). Poverty predisposes individuals to TB and hidden costs associated with even free TB treatment can be catastrophic (Wingfield et al., 2015). Other determinants of health that can predispose populations to incidences of TB may include, but are not limited to:

- Income and social status: research shows that higher income and social status can be linked to better health outcomes.
- Education: poor health can be linked to lower education levels, increasing stress and lowering self-confidence.
- Physical environment: safe water and clean air, along with healthy workplaces and safe housing all contribute to good health outcomes. Generally, those people who are employed are healthier.
- Social support networks: better health outcomes have been linked with communities with greater support from families and friends. Culture and beliefs of family and community can have an overall effect on one's health.

- Genetics: can play a role in determining lifespan, healthiness and the likelihood of developing certain illnesses.
- Health services: access and usage of services that prevent and treat diseases influences health.
- Gender: different types of diseases at different ages can affect both men and women.

The determinants of health are typically accountable for health inequities and the unfair and avoidable differences in health status as seen between Australia and Peru (Hargreaves et al., 2011). Social disadvantages such as lower educational attainment, job uncertainties, unemployment and poor access to appropriate housing (Hargreaves et al., 2011). Poor access to communications and environmental challenges also impact on health status (Hargreaves et al., 2011). Research has shown that although Peru's malnutrition and school enrolment rates have improved, there is still a majority of poor children who temporarily or permanently drop out of school to help support their families (Agency, 2017). Poverty, malnutrition, and hunger is known to increase the susceptibility to infection leading to significant social and economic barriers that delay their contact with health systems in which an appropriate treatment regime can be commenced (Hargreaves et al., 2011). With this research found, the author can not state that Australian's are ' better-off' than the Peruvian's. Non-indigenous Australians living in Metropolitan areas have significantly greater resources at their disposal, housing and schooling is of higher quality, and health and support systems easily accessible (Australian Institute of Health and Welfare, 2012). However, indigenous Australians and those living in rural and remote

areas of Australia do not have the same access as their city cousins (Australian Institute of Health and Welfare, 2012). The determinants of health therefore impact on the ability to access, resource, and utilise health care programs (Australian Institute of Health and Welfare, 2012).

As discussed, the incidence and prevalence of Tuberculosis in Australia and Peru have been shown to be of great differences. While this paper discussed the terms incidence and prevalence; why Tuberculosis remains an issue in Australia; and provided rationales for the differences in incidences and prevalence's while taking into consideration the determinants of health.

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