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Review Spotlight

Trends of Populations indicators in developed and developing countries: A Comparative Study

Mohammad Badre Alam[1*]

1 Bachelor of Public Health Programme, Madhesh Institute of Health Sciences (MIHS), Madhesh Province, Nepal

ARTICLE INFO	ABSTRACT
  *Correspondence: Mohammad Badre Alam BPH Scholar Madhesh Institute of Health Sciences (MIHS), Madhesh Province, Nepal. **E-mail:** badre11199@gmail.com 0009-0004-5044-0351 	**INTRODUCTION:** The world's population seems growing, and expected to reach 7.8 billion by mid-2020, growing from 7 billion in 2010, 6 billion in 1998, and 5 billion in 1986. The average annual growth rate was nearby 1.1% in 2015–2020, which steadily decreased after it peaked at 2.3% in the late 1960.Trends of population indicators between developed and developing countries seems undistinguishable. Therefore, this study aims to identify trends of population's indicators in developed and developing countries. **MATERIALS AND METHODS:** Data were obtained from World Development Indicators (WDI).These survey programs are highly comparable as they share similar sampling approaches and questionnaires designed to estimate standard health indicators. **RESULTS:** The populations of India, Malaysia and Israel was in increasing trends from 2015-2020 whereas Japan was on declining trend from 2015 to2020 however, the populations of Nepal was slightly decreasing from 2015 to 2018 and then it is in increasing trends. Life expectancy rate of Japan was high due to their specific type of Gene quality i.e. DNA 5178 and the ND2-237Met ND genotype which help the Japanese live longer by protecting them against some adult-onset diseases. **CONCLUSIONS:** The growing population in emerging nations like India and Nepal emphasizes the need for increased focus on gender parity, healthcare, education, and resource allocation, while Japan's declining population raises concerns about the need for pro-natal policies. Developed nations like Malaysia and Israel should prepare for the potential challenges associated with high birth rates, such as increased service demand and environmental concerns.

Keywords: Developed and developing countries, population; trend |

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INTRODUCTION

The world's population seems growing, and expected to reach 7.8 billion by mid-2020, growing from 7 billion in 2010, 6 billion in 1998, and 5 billion in 1986. The average annual growth rate was nearby 1.1% in 2015–2020, which steadily decreased after it peaked at 2.3% in the late 1960. Among 201 countries areas, 73 countries had a smaller growth rate in 2010–2020 compared with the previous years and out of these 73 countries, more than 60 are developing countries. The slowing pace of the population growth is closely related to declines in the fertility. Globally, the total fertility rate was 2.4 births per woman of reproductive age groups in 2020, which was decreasing from 2.7 in 2000, 3.7 in 1980, and 5.0 in 1950. In high-income and upper-middle-income countries, the total fertility rate has been below replacement level (2.1 births per woman) for a few years, which is the level required to ensure the replacement of generations in

low-mortality countries. In a few of these countries, total fertility rates have even fallen to extremely low levels, 1.5 births per woman, and even below 1.5 in some countries, for the past several decades [1]. The first 28 days of life of neonatal period is the most vulnerable time for a child's survival.

Globally average neonatal death rate was 18 per 1,000 live births in 2021, down by 51% from 37 deaths per 1,000 live births in 1990. In Compare to the probability of dying after the first month and before reaching age 1 was estimated at 11 deaths per 1,000 and the probability of dying after reaching age 1 and before reaching age 5 was estimated at 10 deaths per 1,000 in 2021. Hence globally 2.3 million children died in the first month of life in 2021 – approximately 6,400 neonatal deaths every day. The under-five mortality rate refers to the probability a new born would die before

reaching exactly 5 years of age, expressed per 1,000 live births. In 2021, 5.0 million children under 5 years of age died. The global under-five mortality rate declined by 59 per cent, from 93 deaths per 1,000 live births in 1990 to 38 in 2021. Despite this considerable progress, improving child survival remains a matter of urgent concern. In 2021 alone, roughly 13,800 under-five deaths occurred every day, an intolerably high number of largely preventable child death [2]. Available literature shows an increases in population trend most of developing and develop countries whereas decline in mortality rate. However, trends of population indicators between developed and developing countries seems undistinguishable. Therefore, this study aims to identify trends of population's indicators in developed and developing countries. Our findings may help guide policy decisions to improve quality as well as knowledge of heath and health related problems of developed and developing countries.

MATERIALS AND METHODS

This study is an analysis of annual cross-sectional routine data from the World Development Indicators (WDI) from 2015 to 2020. Various population indicators in WDI is documented. Five countries were selected for the study. They were Nepal, India, Japan, Malaysia and Israel.

Data sources

Data were obtained from World Development Indicators (WDI).These two survey programs are highly comparable as they share similar sampling approaches and questionnaires designed to estimate standard health indicators [3]. I compiled and analysed data from several different indicators of World Development Indicators (WDI) from 2015-2020 A.D to assess neonatal, infant, and under-5 mortality; crude birth rate (CBR), crude death rate (CDR), total fertility rate (TFR), life expectancy rate and also the populations indicators of five developed and developing countries and to show the trends of these indicators. In this study, multiple, nationally representative, cross-sectional surveys coverage of population's indicators services in equity in effective coverage and its distribution over the population trends and various mortality and morbidity indicators were used. All these data's as well as indicators are taken from the online sources i.e. https://databank.worldbank.org/source/world-development-indicators.

Variable under consideration

The trends of population's indicators and change in populations from developed and developing countries are studied. The indicators used include: neonatal mortality rate, infant mortality rate, and under-5 mortality rate; crude birth rate (CBR), crude death rate (CDR), total fertility rate (TFR), life expectancy rate and the populations indicators of five countries (developed as well as developing)**.**

Data management and Statistical Analysis

Data are obtained from online sources and managed in MS-Excel. A descriptive analysis of the indicators was first performed presenting the trends of population and change in population in developed and developing countries. Also shows the frequency and linear chart of these trends. To visualize the continuous trends in our data, line charts were utilized. For a categorical analysis of indicators, bar diagrams were employed.

Participants and Public Involvement

This was a secondary data analysis, and therefore, there was no direct patient or public involvement.

Ethical Consideration

These all indicators/data's are obtained from the online sources so no ethical consideration should be needed.

RESULTS AND DISCUSSION

Figure 1 demonstrate that the highest population was of India (i.e. 1310152392, 1324517250, 1338676779, 1352642283, 1366417756), and the lowest was of Israel (i.e. 8380100, 8546000, 8713300, 8882800, 9054000, 9216900) from 2015, 2016, 2017, 2018, 2019 and 2020 respectively. In 2020 A.D the male populations was highest in India i.e. 717100970 and Malaysia i.e. 16630813 whereas female is highest in Nepal i.e. 14617070, Japan i.e. 64395674 and Israel i.e. 4629378. The populations of India, Malaysia and Israel was in increasing trends from 2015-2020 whereas Japan was on declining trend from 2015 to2020 however, the populations of Nepal was slightly decreasing from 2015 to 2018 and then it is in increasing trends. Population of developing countries like Nepal and India was increasing due to falling mortality rate which imbalance between births and deaths, underutilized contraception, lack of female education, ecological degradation, increased conflicts and higher risk of disasters and pandemics [4]. Population in developed countries like Malaysia, Israel was increasing due to high fertility rates, increase in longevity, international migration, increase in climate change, decreased food security, impact on biodiversity loss, and overexploitation of resources [5]. For Japan there has never been a peace-time period (time without crises and upheavals such as wars, famines, and epidemics) in the country's recorded history in which the
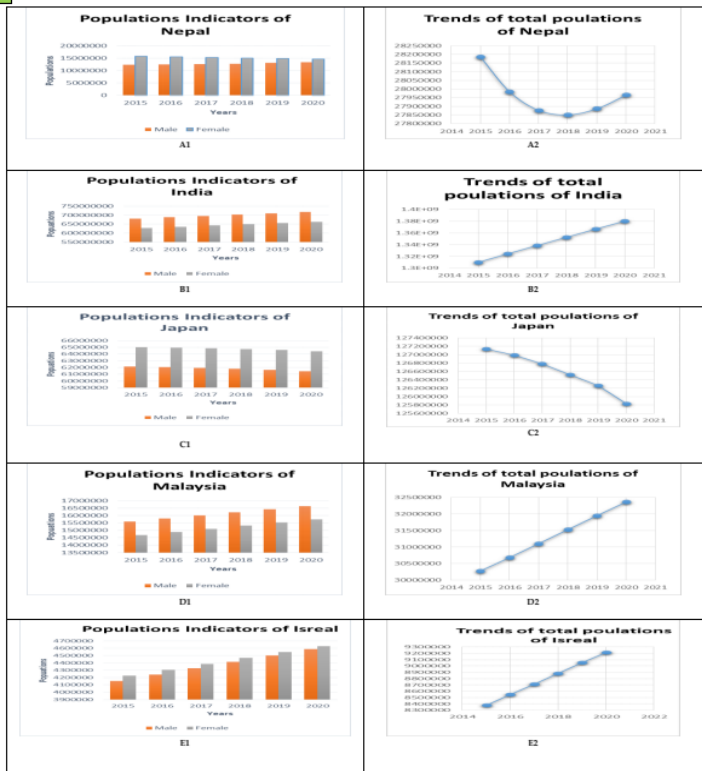
Figure – 1|Trend of population change in developed and developing countries (A1A2-E1E2).

population declined continuously for a long duration of time [6] In India, the male population consistently exceeded the female population from 2015 to 2020. On the other hand, over this period, there were only very slight changes in the ratios of men to women in Nepal, Japan, Malaysia, and Israel. Figure 2 shows that the TFR of five developed and developing countries in a trends. The TFR of Israel was (3.01 per women) higher as compare to other countries and lower of Nepal (1.88 per women) in years 2019 A.D. While study we could not find the TFR of Japan. Similarly, figure 3 illustrates CBR of those five developed and developing countries show that CBR is high in Israel whereas low in Japan in every years from 2015-2019 and CBR is slightly decreasing every years of all those five countries. Figure 4 indicates the life expectancy at birth which was highest in Japan and lowest of India and all five countries life expectancy at birth was slightly in increasing trends. Figure 5 shows the neonatal mortality rate of different five countries and India lies on top level where as Japan lies at the bottom. NMR of all countries was decreasing except Malaysia. Figure 6 displays Infant Mortality Rate of all five developed and developing countries and here also India lies at top level whereas Japan lies at bottom and IMR of all countries was decreasing except Malaysia. Similarly figure 7 illustrate under 5 mortality rate (U5MR) of five developed and developing countries from that India was on top level
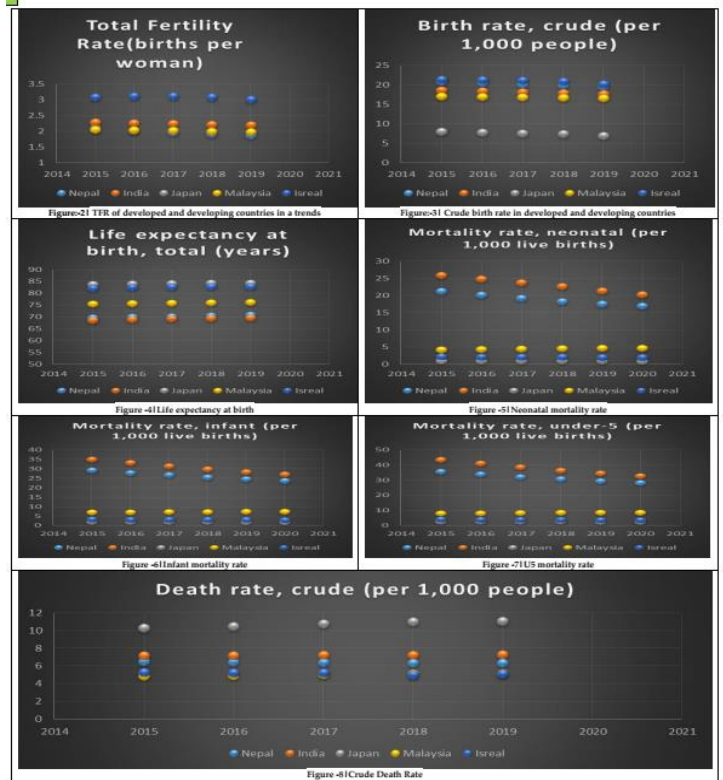
and Japan was at the bottom and all these four countries U5MR was slightly decreasing except Malaysia from 2015-2020. Figure 8 shows Crude Death Rate of all those five developed and developing countries and CDR was high in Japan (11.1 per 1000 populations) from 2015-2020 whereas Malaysia has low up to 2017 and then increases in 2018-2019 and in last 2019 the lowest was of Israel. Overall trends of developed and developing countries the TFR of Israel was high (3.01 per women) this is due to getting married and having kids is the highest cultural value [7] and TFR of Nepal was low due to awareness about family planning and easy access to contraceptive devices [8]. CBR of Israel is high (20.1per 1000 populations) due to high TFR [7] whereas CBR of Japan was high due to many younger Japanese have balked at marrying or having families, discouraged by bleak job respects, corporate cultures that are incompatible with both parents but especially women working, and a lack of public tolerance for small children. Many couples also hesitate to have children due to rising costs [9]. Life expectancy rate of Japan was high due to their specific type of Gene quality i.e. DNA 5178 and the ND2-237Met ND genotype which help the Japanese live longer by protecting them against some adult-onset diseases [10]. Preterm birth complications and infections to be the two major causes of neonatal deaths in India [11]. Deaths rate was high in Japan due to heart disease, pneumonia, accidents, liver disease,

and senility [12]. Strength and Limitations: The findings of this study are based on nearly five decades of high-quality data collected methodically by reputable organisations. As a result of the inclusion of the complete population, the utilisation of this data can be considered a significant strength. We were able to provide a long-term complete account of patterns in population change and mortality in developed and developing countries using these data. Our study obviously has certain drawbacks. First, the interpretation of results for certain demographic indicators may result in the appearance of notable trends. Second, just five countries have been chosen. Finally, it is possible that the tendencies seen in this study are the consequence of combining the full age range and all stages, whereas other trends may only become visible when using more specific age groups and individual stages.

CONCLUSIONS

The results provide insights into the complex population dynamics, mortality, fertility, and life expectancy rates in five developed and developing countries between 2015 and 2020. Israel has historically had the smallest population, while India the greatest. There were clear gender disparities, with more men than women in Malaysia and India, and more equal gender ratios in Nepal, Japan, and Israel. These patterns may have been influenced by a variety of causes, including high fertility rates, longer life expectancies, and climate change, as well as variations in mortality rates, birth-to-death ratios, and unmet need of contraceptive use in developing nations like India and Nepal. The expanding population in emerging nations like India and Nepal calls for increased attention to gender parity, healthcare, education, and resource allocation. Developed nations like Israel and Malaysia need to be ready for the negative effects of high birth rates, such as increasing service demand and harm to the environment. The population reduction in Japan raises worries about the necessity for pro-natal policy. The need of specific healthcare measures is shown by varying death rates. Understanding these consequences is critical for developing targeted strategies to address the various issues and possibilities that each country faces in effectively dealing with its populations.

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