**Don’t Worry, Be Happy: How Bhutan’s Prioritization of National Happiness Could Combat the Burden of Non-Communicable Diseases**

**Abstract:**

 Non-Communicable Diseases (NCDs) are the leading cause of death worldwide, and the burden of NCDs is especially emphasized in Low- and Middle-Income Countries (LMICs). Bhutan is one such LMIC, located Northeast of India in South Central Asia. Unlike other LMICs, however, since the 1970s, the Kingdom of Bhutan has adopted a policy prioritizing Gross National Happiness (GNH) instead of Gross Domestic Product (GDP). In this paper, I explore how Bhutan’s prioritization of happiness over production may contribute to reductions of NCDs for its citizens, compared to other countries in the same region, while examining some of the possible pathways through which happiness could prevent and reduce NCD burden, which include limiting engagement in risk behavior, improving general health, and encouraging positive lifestyle changes.

**Defining Happiness:**

 An inherently abstract term, happiness has been defined in many ways by leading philosophers throughout history, and these representations all find themselves within the medical literature of happiness science. In his review of the connection between health and happiness in scientific literature, Steptoe (2019) lists three major agreed-upon conceptions of happiness: affective well-being, Eudaimonic well-being, and evaluative well-being. Affective well-being follows a hedonist interpretation, representing the experience of positive feelings including happiness, joy, and pleasure. Eudaimonic well-being, represented by Aristotle in his *Nicomachean Ethics*, is a combination of meaning and purpose in life, and includes personal growth, positive and meaningful relationships with others, and self-acceptance. Finally, there is evaluative well-being, which generally refers to a person’s life satisfaction as an appraisal of their quality of life. Other reports might also include discussions of optimism as a measure of happiness. In this report, I will discuss a variety of these measures in studies, and while they are all nuanced in their individual meanings, each still fall within the general umbrella of “happiness” and are typically measured with the aid of a survey or scale-based questionnaire.

**History and Happiness in Bhutan:**

 Bhutan is a Buddhist kingdom located Northeast of India in South Central Asia and east on the Himalaya’s eastern edge. It is bordered by Nepal, Bangladesh, India, China, and Myanmar. Categorized as a LMIC by the World Bank (The World Bank in Bhutan, 2019), Bhutan is a mostly rural country but, there are several urban centers, namely the city of Thimphu. There are many restrictions on urbanization, however, through policies that seek to maintain the geographic beauty of Bhutan as one of the key features of the country’s prioritization of Gross National Happiness, or GNH. While Bhutan’s prioritization of GNH may seem innocuous, this policy may actually be effectively reducing the NCD burden of its citizens.

 In 1972, the fourth King of Bhutan, Jigme Singye Wangchuck, introduced GNH as an indicator of progress and development comparable to the typical measure of growth through GDP. Bhutan’s GNH policy has four main pillars: sustainable and equitable socio-economic development, conservation of the environment, preservation and promotion of culture, and good governance (Bhutan’s Gross National Happiness Index; Adhikari, 2016). In addition to these four pillars, there are 9 indexes for GNH: Psychological wellbeing, health, education, time use, cultural diversity and resilience, good governance, community vitality, ecological diversity and resilience, and living standards. Following these indexes then, Bhutan’s measure of happiness follows a combination of the Eudaimonic and evaluative perspectives discussed earlier. Within these domains are 33 indicators, and “happiness” is identified as having sufficient achievements in 66% of these indicators. The four possible results for survey takers are “unhappy”, “narrowly happy”, “extensively happy”, and “deeply happy” (GNH Survey Report, 2015; Bhutan’s Gross National Happiness Index). Despite these indicators, however, in the 2019 World Happiness Report (WHR), which compared and ranked happiness among the world’s nations, Bhutan ranked only 95th. The United States was 19th (Helliwell et al, 2019; McCarthy, 2018). These findings are echoed in Bhutan’s most recent Gross National Happiness survey, in which 8 percent of people were “deeply happy”, 35 percent were “extensively happy”, 47.9 percent were “extensively happy”, and 9.1% were “unhappy” (GNH Survey Report, 2015; Bhutan’s Gross National Happiness Index).

 Bhutan, however, outranks other LMICs in the Himalayan region. **Table 1** examines the four leading contributors of NCD-related Disability Adjusted Life Years (DALYs) in Bhutan among the entire population in 2019 and compares their percent of total DALYs to four bordering LMICs: Myanmar, Nepal, Bangladesh, and India. The percent burden data of the four NCD conditions: Ischemic Heart Disease (IHD), Chronic obstructive pulmonary disease (COPD), stroke, and diabetes were collected from the Institute for Health Metrics and Evaluation (IHME) Global Burden of Disease (GBD) compare tool (IHME, 2020). These data are not age-standardized as those data was not available for these countries for the conditions and year specified. Each country’s ranking in the 2019 WHR is also shown. It is important to note that while the WHR released results in 2020 and 2021, these reports were excluded to eliminate any possible confounding from the COVID-19 pandemic, though Bhutan was commended in the 2021 WHR for its collaborative efforts to avoid any COVID-19 deaths in 2020 despite allowing international travel (FAQ, n.d.).

**Table 1: Comparison of NCD-Related DALYs and Happiness between nearby LMICs in South Asia shows Bhutan as Highest Ranking for Region.** Data in green represent the percent of total DALYs the condition contributes to the total DALYs for each country. All data in green are taken from the IHME GBD Compare tool (IHME, 2020). All stats in green are for both sexes in the entire population for 2019. Percentages are not age-standardized as that data was not available. The data in yellow represent the happiness ranking given to each country by the WHR 2019 report (Helliwell et al, 2019). Reports from 2020 and 2021 were excluded to avoid possible confounding from the COVID-19 pandemic. Bhutan has the lowest percentage of total DALYs attributable to the specified NCDs: IHD, COPD, stroke, and diabetes, indicating that Bhutan’s population suffers less from these conditions than its LMIC neighbors. Bhutan has the highest happiness ranking of the included countries.

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|  | Bhutan | Myanmar | Nepal | Bangladesh | India |
| IHD | 6.86% | 4.72%  | 5.97% | 7.13%  | 7.97% |
| COPD | 4.78%  | 3.94% | 7.28% | 3.36% | 4.55%  |
| Stroke | 3.52% | 10.06% | 3.74% | 8.11% | 3.71% |
| Diabetes | 2.78% | 4.27% | 2.04% | 2.86% | 2.73% |
| Total | 17.94%  | 22.99% | 19.03% | 21.46% | 18.96% |
| Happiness | 95th | 131st  | 100th | 125th | 140th  |

 Exploring **Table 1**, Bhutan has the lowest percentage of total DALYs of IHD, COPD, Stroke, and Diabetes combined. Though in individual statistics, Bhutan’s percentage of total DALYs for each condition is outranked except for stroke, with a combined percentage of 17.94, Bhutan’s population appears to suffer less from these common chronic conditions compared to their LMIC neighbors. Further, of these Himalayan LMICs, Bhutan has the highest happiness ranking. This correlation may not be just a coincidence, as there is an abundance of literature exploring the association between happiness and a reduction of NCD burden.

**Connecting Happiness to Health:**

 Indeed, happiness and DALY burden may be connected by internal pathways between the human psyche and bodily health, with two main pathways proposed as explanations for these connections; the first being that happier people are more likely to have healthy lifestyles which reduce their risk of mortality and NCD incidence, and the second being that there are biological correlates of happiness that are associated with positive health outcomes (Steptoe, 2019).

Exploring the first explanation, there is adequate evidence supporting a connection between well-being and healthy lifestyle. A 2017 study on the longitudinal factors contributing to risky behavior in adolescents in the United Kingdom found that higher happiness scores were longitudinally associated with individual’s persistent non-use of alcohol or cigarettes (Cable et al, 2017). An additional paper using data from the same UK household longitudinal study found that after adjustments for risk factors, an increase in well-being was inversely associated with arthritis and diabetes risk (Okely et al, 2016).

Happiness has also been shown to relate to a longer lifespan in general. A meta-analysis completed in 2017 reviewed 62 articles investigating longitudinal mortality and well-being data in over 1.2 million participants and found that subjective well-being was a protective factor for all-cause mortality (Martín-María et al, 2017). A separate study completed among elderly populations in Singapore found that happiness was associated with reduced likelihood of mortality and that this benefit occurred for individuals with for each unit increase in “happiness score” as determined by the administered survey (Chei et al, 2018). Other recent longitudinal reports have also been able to connect specific NCDs like IHD and stroke to increased stress, and optimism to increased longevity (Lee et al, 2018; Lee et al, 2019). Further, a 22-year cohort study using the PAQUID database, which consists of a cohort of 3,777 people aged 60 and over living in France, was only able to connect positive affect, not negative affect or life satisfaction, to longevity (Gana et al, 2016). These studies combined suggest that, generally, happiness, either directly or indirectly, can contribute to a longer life for individuals.

The second hypothesis connecting happiness to improved health involves biological mechanisms. One proposed pathway that has been recently explored is the relationship between optimism and telomere length. Telomeres are nucleotide sequences at the end of linear chromosomes that protect genetic information. Telomeres are known to shorten with age and increase the incidence of disease, and while telomeres will continue to shorten throughout a person’s lifespan, the rate at which the telomeres shorten can be influenced by diet and physical activities. After examining data from large cohort studies, Kim et al (2020) used linear regression models, adjusted for sociodemographic factors, depression, health status, and health behaviors, to determine the link, if any, between happiness and telomere length. Though this study found no association between optimism and telomere length and could not support this mechanism as a possible mechanism by which happiness influences lifespan, it speaks to the many possible biological pathways through which positive emotions may operate.

 Despite the many studies supporting the connection between happiness and healthy lifestyle, reduced NCDs, and increased lifespan, there remain major challenges in drawing these associations. In 2016, a report was released analyzing whether happiness could directly affect mortality among women in the UK. Women were recruited between 1996 and 2001 and three years after recruitment, were asked to rate their health, happiness, stress levels and other factors. These reports were analyzed alongside mortality reported before January 1, 2012. After removing all possible confounders in the association between health and unhappiness, the researchers determined that happiness did not have a direct effect on mortality (Liu et al, 2016). Another concern brought up in a 2019 review of happiness and health was that an association between negative emotions, i.e., stress and depression, to negative health outcomes does not mean that the inverse will prevent those outcomes (Steptoe, 2019). The control in these investigations is not happiness, but rather a neutral state in which the participant neither feels particularly happy nor sad. Other possible issues in connecting happiness and health are problems with confounding and reverse causation. Indeed, a 10-22-year prospective study examining the relationship between healthy lifestyle at baseline and future happiness and optimism in women found that those who reported moderate and higher happiness levels at baseline were more likely to report sustaining healthy lifestyles, defined with factors including physical activity, body mass index, diet, and tobacco and alcohol consumption. However, the inverse was also supported: women who started with a baseline healthy lifestyle were more likely to sustain higher happiness levels than their unhealthy lifestyle counterparts (Trudel-Fitzgerald et al, 2019). Though there are some challenges associated with the connection between happiness and health, there remains ample evidence to suggest that happiness, and individual and even countrywide interventions that promote improved emotional state could be used to support the physical health of patients and reduce the burden of NCDs.

**Lessons from Bhutan and Suggested Interventions:**

Despite some mixed reviews from the scientific community, many people continue to have the intuition about the supposed health benefits associated with a happy life and outlook, and the Bhutanese population certainly include health in their conception of happiness and vice versa. In a 2020 qualitative study on knowledge, perception, and practice related to NCDs in relation to happiness among urban and rural Bhutanese residents, health was considered a key component of happiness and many individuals valued the ability to find happiness in any situation. Though happiness was considered a key aspect of health, the Bhutanese in this study reported little knowledge of risk factors like diet and exercise that are known to contribute to the incidence of NCDs, despite advice given from medical professionals. Though some reported suggestions from their doctors including the need to exercise more and use less fat in cooking, adequate knowledge or education on what these recommendations meant for implementation were not provided, and respondents continued to be physically inactive and cook with copious amounts of oil and butter (Kohori-Segawa et al, 2020). Thus, while happiness may be an important aspect of health related to NCDs, it remains imperative to accurately inform individuals of the nature of NCDs and how to prevent them through the reduction of risk factors.

But how does Bhutan actually support happiness and well-being for its citizens? There are many characteristics that prevent happiness in the population of Bhutan, including frequent landslides that hinder development, rugged terrain, and the continued restriction of minority’s rights in the population (Meier & Chakrabarty, 2016), but Bhutan has taken large strides in developing policies for the benefit of its people. To protect the natural wildlife in the nation, the country has banned plastic bags since 1999, and the Bhutanese constitution states that at least 60% of the country must remain under forest cover. Since 2005, tobacco has also been banned in the nation, and Bhutan encourages its citizens to continue the Buddhist faith and find time for meditation and spiritual connection in their daily life (LaMotte, 2019; Thinley & Hartz-Karp, 2019). These interventions are noteworthy for their prioritization of a sustainable future, with high living, health, and education standards, and professionals recognize the need for systemic change (Sithey, 2018). The GDP, valuing only economic wealth, actively discourages the achievement of these goals.

**Possible Opportunities and Recommendations:**

Considering the connection between happiness and health, and how Bhutan implements policies to reduce the burden of NCDs for its citizens, there are many opportunities for Bhutan and other countries to make use of this data. Outside of national policy changes like the ones Bhutan has already implemented, there are also strategies, like positive psychology interventions (PPIs) that use mindfulness techniques to improve participant’s health. One randomized control trial in 2019 evaluated the effect of gratitude interventions, through the use of a daily gratitude journal, on participant’s well-being and mental health and found that positive affect, subjective happiness, and life satisfaction were significantly increased in the intervention group (Cunha et al, 2019). While this intervention didn’t specifically cite improvements in physical health, articles previously explored support these connections, and there is additional work reviewing the impact of PPIs on major NCDs like Cardiovascular disease (Kubzansky et al, 2018). Using this information, I would personally recommend for healthcare professionals in LMIC to consider implementing PPIs in addition to the current standard of care treatments for their patients. However, there also must be policy change at the national level. Health and progress are more than the physical ability of citizens to produce labor. The conception of growth and development as a measure of work output is grossly outdated, and if nations around the world hope to survive sustainably, they must change their policies to include for those factors, using happiness and emotional health to improve the life of their people.

**Conclusion:**

 In this article, I discussed Bhutan and their policy of prioritizing Gross National Happiness instead of Gross Domestic Product for the benefit of their citizens. I explain that while the Bhutan is far from the top of the list of countries ranked for happiness, and though it continues to suffer from a large burden of NCDs, Bhutan outranks its neighboring LMICs in the Himalayan region. I elucidated the literature supporting connections between happiness and improved physical health and provide some possible pathways for that connection. I then emphasized some of the national policies Bhutan has put in place that exemplify values of sustainability and meaningful development and list some recommendations for how policies and other interventions might be used around the world to combat the burden of NCDs.

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