Suicide and Happiness: The Association Between Two Potential Sustainable Development Goal Indicators for Mental Health

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Suicide rates are one of the key indicators used to monitor population mental health in the United Nations' Sustainable Development Goals (SDGs). The Lancet Commission on Global Mental Health[1] and Sustainable Development Report 2019[2] recently proposed that subjective well-being (measured using a questionnaire-based measure of happiness) could be an additional indicator of mental health in the SDGs. However, the extent to which happiness taps into a different component of mental health compared to suicide is understudied at the population level. In one recent study, the association between suicide and happiness across communities in Hong Kong was largely explained by their close relationships with socioeconomic factors[3]; likewise, any association between national suicide rates and happiness could be due to shared socioeconomic influences on both of these measures. Furthermore, the suicide-happiness relationship may differ in countries with different levels of socioeconomic development.[4] This study examined the cross-national relationship between countries' suicide rates and happiness levels.

Methods

Data. Suicide rate data were from the World Health Organization's Statistics databases.[5,6] Happiness data were from the World Happiness Report 2019 published by the United Nations Sustainable Development Solutions Network.[7] Complete data for both suicide and happiness were available for 2010, 2012, and 2015. The United Nations' Human Development Index (HDI) measures the socioeconomic circumstances of each country across 3 dimensions—health, education, and standard of living.[8] Countries with the highest-quality suicide data[5] or a very high HDI were included in the main analysis (n = 62; referred to as countries with high-quality suicide data for simplicity) to ensure that high-quality data were analyzed (data available from the authors upon request). Data for all countries with available data for suicide and happiness (n = 122) were used in the sensitivity analysis.

Statistical analysis. Averaged suicide rates and happiness levels in the 3 study years were calculated. Spearman rank correlation coefficients (ρ) with 95% confidence intervals (CIs) were computed to assess the association between suicide and happiness. Partial correlation was calculated to investigate the potential confounding effect of HDI. Correlation analyses stratified by HDI level were conducted using the median of HDI as the cutoff point, and the difference in correlation coefficients between lower and higher HDI countries was examined using Fisher *Z* score.[9]

Results

There was no statistical evidence for a correlation between suicide and happiness (ρ = −0.21; 95% CI, −0.43 to 0.03; *P* = .10) in the 62 countries with high-quality suicide data (Figure 1). After controlling for HDI, there was a weak inverse association between suicide and happiness in these countries (ρ = −0.34; 95% CI, −0.55 to −0.10; *P* = .008); countries with higher happiness scores had lower suicide rates. Happiness was moderately correlated with HDI (ρ = 0.56; 95% CI, 0.33 to 0.73; *P* < .001), while there was little evidence for a correlation between suicide and HDI (ρ = 0.13; 95% CI, −0.12 to 0.33; *P* = .33). When stratifying by HDI, there was no correlation between suicide and happiness (ρ = −0.08; 95% CI, −0.45 to 0.31; *P* = .70) in countries with a higher HDI (n = 31), while there was a moderate negative correlation (ρ = −0.43; 95% CI, −0.69 to – 0.07; *P* = .02) in countries with a lower HDI (n = 31), although there was no statistical evidence for a difference in lower and higher HDI countries (*P* = .17). Sensitivity analyses including all countries with available data (n = 122) showed a similar pattern of correlations between suicide, happiness, and HDI as that among the 62 countries included in the main analysis.

Discussion

Both suicide and happiness may be appropriate indicators for mental health in the SDGs as they appear to measure

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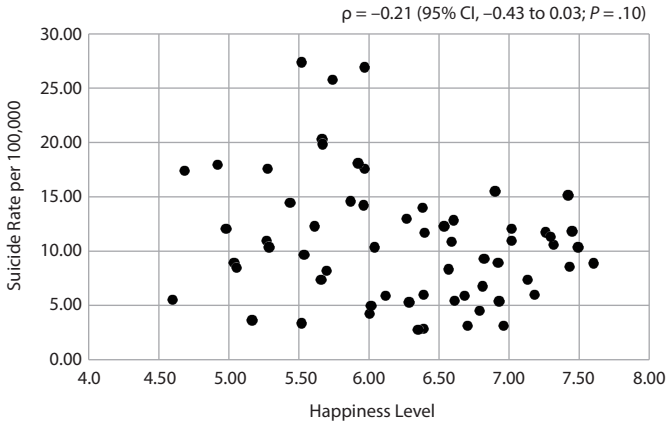
Figure 1. Scatterplot of Averaged Suicide Rates and Happiness Levels in 62 Countries in 2010, 2012, and 2015, With Spearman Correlation Coefficient (ρ) and 95% Confidence Interval (CI)



different aspects of mental health—happiness could be a measure of the population's well-being and is related to a country's development level, while suicide rate is a measure of the population's suffering at the extreme low end and does not appear to be related to a country's development level. The weak association between suicide rates and happiness could also be because factors other than mental health may affect suicide rates, such as access to lethal means (eg, firearms in the US), media reporting of suicide, and levels of alcohol misuse.[10]

This is the first global assessment of the association between countries' suicide rates and populations' happiness. Some limitations need to be considered. First, our main analysis was limited to countries with reliable suicide data, which were mostly high development level countries. Second, there could be factors that lead to differences in measuring national happiness level such as sampling, response rates, and cultural influences on interpreting questions. Third, we did not investigate other important factors that may underlie the suicide-happiness association such as the prevalence of mental disorders because data were unavailable.

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