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Factor Enhancing Quality of Life

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Abstract *An attempt is made in this study to analyze the factors affecting the Quality of Life (QoL). It is difficult to measure the Quality of Life (QoL); hence Human Development Index (HDI) was used as the measure for QoL. Different factors such as standard of living, education, GDP, Gross Capital formations, Urbanizations and Physicians were examined that how these programs, in turn, influenced QoL. Data was collected from World Bank (2019) and UNDP (2019) and examined for 71 United Nations member countries over the period 1990-2019. The results obtained from cross-sectional and panel data approaches suggest that the indicators used in the study significantly enhance the quality of life. The study offers important policy implications.*

Key Words: Quality of Life, HDI, GDP, Gross Capital Formations, World Bank

JEL Classification:

Introduction

Quality of life is a difficult concept to pinpoint and defines. The researchers think that due to GDP per capita and other such economic statistics, the standard of living of countries and citizen can best be addressed.

It is possible to know the quality of life of people by observing a number of characteristics such as a decent car, place of living, food, health care and education etc., yet the economist refers to the average GDP as a measure of standard of living.

Achieving a better quality of life (QoL) is the goal of every economy across the globe. The United Nations (2015) introduced Sustainable Development Goals (SDG's) for their 2030 agenda, which is based on 17 goals. These goals cover an array of socio-economic, equality, health, and environmental issues. It starts from the eradication of poverty to the improvement in health, towards the standard of life and attainment of better education and carbon-free environment that affects the life of the individuals directly or indirectly. Thus, SDGs focus on those dimensions which are closely connected with the betterment of the QoL (UN, 2017).

According to UNDP (1998), QoL involves the fulfilment of basic needs, which include health, education, and standard of living, while Sirgy et al. (2004) called it a qualitative

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measure of well-being which includes consumer, health, social, economic and physical well-being. Previously, scholars and economists measured QoL through GDP per capita (Nussbaum & Sen, 1993; Majeed & Mumtaz, 2017), but Anand and Sen (1999) and Majeed (2019) stated that QoL is not only affected by income ratherthere are also some other major sociological, physiological and human dimensions of individual's life which were being ignored previously. Therefore, Sirgy et al. (2004) stated that QoL is a subjective measure, and to empirically measure it; the best proxy is the "Human Development Index (HDI)".

Objectives of the Study are to

i. Analyze the main determinants of Quality of Life.
ii. The impact of independent variables, and their magnitude, on theQuality of Life.
iii. The determinants were then used to test the hypothesis shown below.

The Hypotheses

i. There is a positive correlation between HDIand Standard of Living.
ii. There is a positive correlation between HDIand EDU.
iii. There is a positive correlation between HDIand GDP.
iv. There is a positive correlation between HDIand Gross Capital formations.
v. There is a positive correlation between HDIand Urbanizations.
vi. There is a positive correlation between HDIand Physicians.

Literature Review

The Human Development Index (HDI) was initiated by the United Nations in 1990, and it became global phenomena. HDI hereby offer answers to the question about the living standard of the people. According to the United Nation HDI consist of three indicators such as Health, Education and standard of living. Life expectancy at birth is used as a measure of health indicators. The second indicator, education, is measured as the mean year of schooling and average years of schooling, while the gross national income per capita is used as a measure for standard of living. These are shown in the figure below.

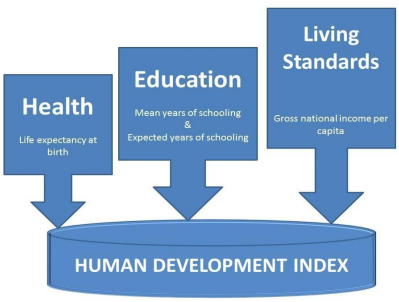

Figure 1: Components of Human Development Index

The Human Development Index (HDI) is used to intake the develop ent status of a country. HDI was initiated in 1990 and used across the globe to measures different development indicators such as education level, life expectancy and standard of living of the county people. The critic of HDI indicates that too few indicators of HDI are used as

chosen randomly (Berenger & Verdier-Chouchane, 2007).

Economist across the globe used an index of indicators to measured HDI. The nine indicators are i. Marerial well being, ii. Political stabilities, iii. Security, iv. Community life, v. family life, vi. Climates, vii. Gender equality, viii. Freedom of expressions and ix. health (Kenny, 2005).

Similarly, income supports quality of life, and studies have argued that income per capita is the best measure for QoL (Nussabaum & Sen, 1993; Majeed & Mumtaz, 2017); however, as pointed out by Anand and Sen (1999) and Majeed (2019) that although GDP per capita positively affects QoL, it is not the only factor as it does not capture the sociological and psychological aspects of human life. Among these factors are health, education, capabilities of individuals, provision of opportunities, freedom to choose, and live their life accordingly, which enhances their standard of living and thus improves human development.

Besides income, education is the major determinant of QoL, which is also highlighted by Anand & Sen (1999). Education enhances QoL by increasing the knowledge and skills which support access to jobs and enhanced productivity (Majeed and Khan, 2019). Education also equips with the power to decide and the freedom to choose among different alternatives (Nourzad & Powell, 2003; Majeed, 2019).

Adverse health status also affects the QoL. The lack of medical facilities and the number of physicians available per person has a determinantal effect on QoL. For human development, the number of physicians per person is important as it reflects the development of a country (Nourzad & Powell, 2003; Asongu, 2013).

Urbanization improves QoL through the availability of better facilities, such as health, education, improved infrastructure, and employment opportunities. Urbanization has a great influence on HDI (Nourzad and Powell, 2003). Urbanization negatively affects QoL. The reason is that overpopulation put pressure on the available resources. Migration leads to overcrowding and overexploitation of resources and thus having adverse effects on QoL.

Another factor documented in the literature that contributes to human development is gross capital formation. Gross capital formation represents the level of investment in an economy. Higher investment in a country leads to higher employment opportunities. The increase in employment level supports a better standard of living which will lead to improved QoL. Therefore, the model constructed can be represented as below,

QoL_{it} = (Standard of living$_{it}$, GDP_{it}, $Secondry\ School\ Enrollment_{it}$, $Urbanizationit$, $Gross\ Capital\ Formation_{it}$, $Physicians_{it}$)

Table 1. Variables Description

Variables	Definition	Unit	Source
Dependent Variable			
Human Development Index (HDI)	"The Human Development Index (HDI) was developed in 1990, is used to measure a country socio-economic achievement such as education level, life expectancy and standard of living of the county.	0-1	"UNDP (2019)"

Independent Variable (Focused)			
Standard of Living	"The gross national income per capita is used as a measure for standard of living".	National Income divide by population	"World Bank (2019)"
Independent Variables (Controlled)			
GDP	"The produced goods and services in a country during a period of one year with its financial value is known as GDP."	Constant of 2010 US$	"World Bank (2019)"
Secondary School Enrollment	"Measures literacy among persons aged 15 years the population of the corresponding official school age.	% Net	"World Bank (2019)"
Urban Population	Urban population refers to people living in urban areas as defined by national statistical offices.	% of Total Population	"World Bank (2019)"
Gross Capital Formation	Gross capital formation (formerly gross domestic investment) is measure as the increase in the fixed assets of the economy plus the net changes in inventories.	Constant of 2010 US$	"World Bank (2019)"
Physicians	Physicians include generalist and specialist medical practitioners.	Per 1000 People	"World Bank (2019)"

Model, Data, and Methodology

Theoretical Model

QoL being a subjective measure, cannot be empirically estimated (Sirgy et al., 2006); therefore, the current study used the

"Human Development Index (HDI)" to measure QoL. Therefore, the QoL model can be expressed:

QoL_{it}= f(standard of living$_{it}$, GDP_{it} , $Secondry\ School\ Enrollment_{itit}$, $Urbanization_{it}$, $Gross\ Capital\ Formation_{it}$, $Physicians_{it}$)

Empirical Model

To check the determinant of QoL, it is therefore important to empirically investigate potential indicators in improving QoL. Therefore, the empirical model constructed for investigating the relationships is mentioned below,

$$QoL = \alpha 0 + \alpha 1\text{standard of living}_{it} + \alpha 2education_{it} + \alpha 3GDP_{it} + \alpha 4urbanization_i + \alpha 5gross\ capital\ formation_i + \alpha 6physicians_{it} + \mu_t + \varepsilon_{it} \quad (1)$$

Where "i" represents "cross-sections while" "t" represents "time". QoL is quality of life that is measured by "HDI (range 0- 1, 0 is for the lowest HDI while 1 is for the highest HDI rank)", the standard of living is "people access to basic resources)", education represents "secondary school enrollment (% net)", "GDP (constant 2010 US$)" is used to capture the effect of income on QoL, urbanization (% of the total population) is used to

analyze the effect of urbanization on QoL, "gross capital formation (constant 2010 US$)" is used to capture the effect of investment on QoL while "physicians (Per 1000 people)" are used to capture the effect of health expenditures on QoL. α_0 represents the intercept terms, while θ_i and μ_t represent country-specific unobservable effects and time effects, respectively. The term ε_{it} is an error term.

Data and Methods

The current study has taken the data from World Bank (2019) and UNDP (2019). The analysis is based on the panel data of 71 UNDP member countries from 1990-2019. The decision about the countries and the time frame is based on the availability of the data. The GDP, urbanization, and gross capital formation are transformed into logarithmic form as it controls Heteroscedasticity and provides consistent findings.

The study concluded for panel analysis; the study employed different novel techniques, which include pooled OLS, random effects, fixed effects, and IV-Fixed effect (for controlling endogeneity). The incorporation of different methodologies is justified through their specific characteristics. As pooled OLS does not account for country-specific and time-specific characteristics; therefore, random effects and fixed effects were employed to control these effects. Random effects give meaningful results if there is no correlation between country-specific characteristics and repressors, while fixed effect assumes that there exists a correlation between country-specific effects and the regressors. However, the fixed effect cannot deal with the endogeneity problem; therefore, to tackle this problem; IV-Fixed effects have been employed.

Results and Discussion

Panel Analysis

Table-2 incorporates the results obtained from panel analysis. The techniques used are pooled OLS, random effects, fixed effects, and IV-Fixed effects, presented in Column 1-4, respectively. Column 1 shows the results of the pooled OLS technique. The results indicate that the regression coefficient of the standard of living positively contributes to a better QoL. The coefficient depicts that 1 percent increase in the availability of standard of living boosts the QoL by 0.0012 percent. Moreover, the increase in urbanization and gross capital formation negatively contribute to the quality of life. It specifies that an increase in urban population leads to overcrowding, exploitation of the resources, and an increase in pollution, which adversely affects the quality of life.

Table 2. Panel Analysis

Variables	Pooled OLS	Random Effects	Fixed Effects	IV-Fixed Effects
The dependent Variable is QoL (HDI)				
Standard of living	0.00018***	0.00161***	0.0490***	0.445***
	-(0.0004)	-(0.0003)	-(0.0080)	(0.0610)
Education	0.00129***	0.00172***	0.00145***	0.0966***
	-(0.0002)	-(0.0001)	-(0.0001)	(0.00591)
GDP	0.114***	0.0800***	0.114***	-0.0301***
	-(0.0034)	-(0.0035)	-(0.0036)	(0.00235)
Gross	-0.0116***	-0.003	-0.0307***	-0.00957

Capital Formation	-(0.0022)	-(0.0026)	-0.006	(0.00684)
Urbanization	-0.0306***	-0.0599***	-0.0249***	0.00215
	-(0.0063)	-(0.0038)	-(0.0024)	(0.00148)
Physicians	0.00406***	0.00896***	0.00537***	0.000356***
	-(0.0020)	-(0.0016)	-(0.0014)	(0.0011)
Constant	-1.809***	-0.551***	-1.977***	-1.840***
	-(0.0811)	-(0.0408)	-(0.0812)	(0.0839)
Observations	520	520	520	520
F-Statistics	564.73	-	421.14	564.73
Wald Chi2	-	1550.11	-	-
R-Square	0.862	0.9244	0.948	0.830
LM Test	0.0000	-	-	-
Hausman Test	-	0.0000	-	--

*Note: Standard errors in parentheses * p < 0.1, ** p < 0.05, *** p < 0.01*

Moreover, the regression coefficient of gross capital formation is 0.0116 percent depicting a decrease in quality of life. While the coefficient of GDP, secondary school enrollment, a number of physicians indicates an improvement in the quality of life.

The value of R-square is 0.86 percent, indicating that explanatory variables explain 86 percent of the variation in the quality of life, while F-statistics states that the explanatory power of the variables in the model is strong.

In pooled OLS technique, individual as well as country-specific characteristics are being ignored, which leads to violation of assumptions related to the error term. Random effects solve those violations by incorporating separate intercepts in the model, which is assumed to be random. This assumption of separate intercepts states that the model is exogenous. Column 2 of Table-2 displays the result obtained by applying the random effects technique, which deals with country-specific characteristics. The results indicated that the variables used in the model are significant and supported by the theory and literature. The LM test is applied to choose between pooled OLS and the random effects technique. The p-value suggests that random effects are better than pooled OLS. The p-value is significant at a 1 percent level of significance.

The random-effects technique assumes that there exists no correlation between country-specific characteristics and repressors, while fixed effects, in contrast, assume that there exists a correlation between regressors and country-specific characteristics. It controls time-invariant characteristics that can be correlated with the independent variables. Column 3 of Table-2 displays the results obtained from fixed-effects techniques. All the variables possess expected signs according to the theory depicting that the results obtained are consistent and robust across the techniques. Standard of living improves the quality of life along with education, GDP, and a number of physicians. Hausman test was employed for the selection between random and fixed effects. The null hypothesis suggested that the random effect is better. The p-value is less than 5 percent indicating the rejection of the null hypothesis. To construct the links among explanatory and dependent variables, the country-specific characteristics are important as intended by Hausman.

Moreover, one problem with the fixed effects is that it does not deal with the problem of endogeneity. Therefore, to address this problem, the study has used the IV-fixed

effect technique.

Standard of living is being instrumentalized by its lag values along with regional dummies. The endogeneity-free results are reported in the 4th column of table-2. It depicts the positive relationship between standard of living and QoL, and the result is statistically significant. Regarding the overall significance of the model, the value of F-statistics and Wald-Chi2 is depicting that all the independent variables are the true determinants of the QoL. Moreover, the value of R-square is also illustrating that almost 70- 80 percent of the variations in the QoL is being explained by the independent variables, and the model is the best fit.

Table-3 shows the level of hypothesis, as proposed above in this study, for possible acceptance and rejections based on the results of the regression analysis.

Table 3. Summary of hypotheses tested

Hypotheses	**Accept /Reject**
There is a positive correlation between HDIand Standard of Living.	Accepted
There is a positive correlation between HDIand EDU.	Accepted
There is a positive correlation between HDIand GDP.	Accepted
There is a positive correlation between HDIand Gross Capital formations.	Reject, the correlation is negative
There is a positive correlation between HDIand Urbanizations.	Reject. The correlation is negative
There is a positive correlation between HDIand Physicians.	Accepted

The regression model, as calculated above, hereby resulted in the proposed model, is hereby presented as follows:

$$QoL = -1.809 + 0.00018 \text{ standard of living}_{it} + 0.00128 education_{it} + 0.114 GDP_{it} - 0.0306 urbanization_{it} - 0.0116 gross\ capital\ formation_{it} + 0.00406 physicians_{it} + \mu_t$$

The coefficient depicts that 1 percent increase in the standard of living boosts the QoL by 0.00018 percent. The coefficient of GDP, secondary school enrollment, the number of physicians indicates improvement by 0.114percent, 0.00128percent and 0.00406 percent, respectively, in the quality of life, while the regression coefficient of gross capital formation is -0.0116 percent, depicting a decrease in quality of life.

Conclusion

QoL is one of the fundamental aspects of economic development, and to sustain it; it is important to overcome the indicators influencing it. For sustainable development, availability and affordability of educational support, better standard of living, GDP etc., is of supreme importance as it enhances QoL. Hence this study examined the role and relationship of the different indicator with QoL in 71 United Nations member countries between 1990 and 2019. To fulfil the purpose, the study used HDI to measure QoL as it is a subjective measure. The study has conducted both panels as well as cross-sectional analysis. The results are from the Pooled OLS, Random effects, and fixed effects.

The results obtained support improved QoL through the indicators used. The problem of endogeneity is addressed using IV-Fixed effects and Two-SLS. Our findings

remain robust across the techniques. The IV-Fixed effects deal with endogeneity, time-variant, and time-invariant characteristics, respectively. The robustness of the results is confirmed through sensitivity analysis. The results indicate that the regression coefficient of the standard of living positively contributes to a better QoL. The coefficient depicts that 1 percent increase in the standard of living boosts the QoL by 0.0012 percent. Results are consistent with the study of ADB (2016) and UNDP (2006).

Moreover, the increase in urbanization and gross capital formation negatively contribute to the quality of life. It specifies that an increase in urban population leads to overcrowding, exploitation of the resources, and an increase in pollution, which adversely affects the quality of life.

The value of R-square is 0.86 percent, indicating that explanatory variables explain 86 percent of the variation in the quality of life, while F-statistics states that the explanatory power of the variables in the model is strong.

Therefore, based on our findings, it is suggested that the governments of all countries should ensure to divert their resources for the improvement of the standard of living of their citizen accessibility to education and health be made possible at the doorstep. Improvement in Gross domestic production enhance the quality of life; hence all measure be made for increased productivities.

The study also has some limitations. The study was unable to conduct regional as well as country-specific analysis because of the data limitations in the case of the standard of livingly managed. The analysis is based on only 71 "United Nations member countries," which can be extended to other member countries based on the availability of data.

References

ADB. (2016). Asian water development outlook 2016: *Strengthening water security in Asia and the Pacific*. Philipines, ADB. [ONLINE]: https://www.adb.org/publications/asian-water- development-outlook-2016

Anand, S., & Sen, A. (2000). Human development and economic sustainability. *World Development*, *28*(12), 2029-2049.

Asongu, S. A. (2013). Fighting corruption in Africa: Do existing corruption-control levels matter? *International Journal of Development Issues*, *12*(1), 36-52.

Bérenger, V., & Verdier-Chouchane, A. (2007), "Multidimensional Measures of Well-Being: SoL and QoL Across Countries", *World Development*, Vol. 35(7), pp. 1259-1276.

Devlin, N., & Hansen, P. (2001), "Health care spending and economic output: Granger causality",*Applied Economics Letters*, Vol. *8*(8) pp. 561-564.

Docteur, E., & Oxley, H. (2003). "Health-Care Systems: Lessons from the Reform Experience", *OECD Health Working Papers*, 28 November 2012, http://www.oecd.org/dataoecd/5/ 53/22364122.pdf.

Frankel, J. A., & Rose, A. K. (2005). Is trade good or bad for the environment? Sorting out the causality. *Review of Economics and Statistics*, *87*(1), 85-91.

Khodabakhshi, A. (2011). "Relationship between GDPand Human Development Indices in India", *International Journal of Trade, Economics and Finance*, 2(3), pp. 251-253.

Kohn, M. L. (1976). "Occupational Structure and Alienation", *The American Journal of Sociology*, 82, pp. 111-130.

Liu, J. T., & Chang, et al. (2005). "An Empirical Note on Testing the Wagner's Law for China: 1979-2002", *The Business Review*, *3*(2) pp. 131-134.

Majeed, M. T. (2018). Quality of life and globalization: Evidence from Islamic countries. *Applied Research in Quality of Life, 13*(3), 709-725.

Majeed, M. T. (2019). Quality of life and globalization: Econometric evidence from Asian economies. *Journal of Quantitative Methods, 3*(1), 85-114.

Majeed, M. T., & Gillani, S. (2017). State capacity and health outcomes: An empirical Analysis. *Pakistan Journal of Commerce and Social Sciences, 11*(2), 671-697.

Majeed, M. T., & Khan, F. N. (2019). Do information and communication technologies (ICTs) contribute to health outcomes? An empirical analysis. *Quality & quantity, 53*(1), 183-206.

Majeed, M. T., & Liaqat, R. (2019). Health outcomes of social inclusion: Empirical evidence. *Pakistan Journal of Applied Economics, 29*(2), 201-242.

Majeed, M. T., & Luni, T. (2019). Renewable energy, water, and environmental degradation: A global panel data approach. *Pakistan Journal of Commerce and Social Sciences*, *13*(3), 749-778.

Majeed, M. T., & Mumtaz, S. (2017). Happiness and environmental degradation: A global analysis. Pakistan Journal of Commerce & Social Sciences, 11(3), 753-772. Mangyo, E. (2008). The effect of water accessibility on child health in China. *Journal of Health Economics*, *27*(5),1343-1356.

Nourzad, F., & Powell, J. J. (2003). Openness, growth, and development: Evidence from a panel of developing countries. *Scientific Journal of Administrative Development, 1*(1), 72-94. Nussbaum, M., & Sen, A. (Eds.). (1993). *The quality of life*. England, UK: *Oxford University Press*.

OECD. (2020). Organization for Economic Cooperation and Development. Editorial: After the lockdown, a tightrope walks toward recovery. *OECD Economic Outlook,* http://www.oecd.org/newsroom/global- economy-faces-a-tightrope-walk-to-recovery.htm.

Opreana, A. & Mihaiu D. M. (2011). "CorrelationAnalysis Between the Health System and Human Development Level Within the European Union", *International Journal of Trade, Economics and Finance*, *2*(2), pp. 99-102.

Rehmat, S., Majeed, M. T., & Zainab, A. (2020). Panel data analysis of institutional quality and population health outcomes. *Empirical Economic Review, 3*(1), 21-42

Rifkin, J. (2004). The European Dream: How Europe's Vision of the Future Is Quietly Eclipsing the American Dream, Polity Press, Cambridge, UK.

Ross, C. & Van Willigen, M. (1997). "Education and the Subjective QoL", *Journal of Health and Social Behavior*, 38(3) pp. 275-297.

Sinha, D. (1998). "Government Expenditure and Economic Growth in Malaysia", *Journal of Economic Development*, *23*(2) pp. 71-80.

Sirgy, M. J., Lee, D. J., Miller, C., & Littlefield, J. E. (2004). The impact of globalization on a country's quality of life: Toward an integrated model. *Social Indicators Research*, *68*(3), 251-298.

SIWI. (2018). (Stockholm International Water Institute) (2018). *Making water a part of economic development. The economic benefits of improved water management and services*. Sweden, SIWI.https://www.researchgate.net/publication/42765907_Making_Water_a_Part_of_Economic_Development_The_Economic_Benefi_ts_of_Improved_Water_Management_and Services/link/5bd1e58192851c98e181cfcf/download

Smith, W., & Abdullah, A. (2004). "The Impact of the Asian Financial Crisis on Human ResourceManagement in Malaysia", *Asia Pacific Business Review*, *10*(3/4) pp. 402-421.

Tarrass, F., & Benjelloun, M. (2012). The effects of water shortages on health and human development. *Perspectives in Public Health*, *132*(5), 240-244.

Tropp, H. (2015). Making water a part of economic development: The economic benefits of improved water management and services. *Investing in Water for a Green Economy*, 80-108. Taylor & Francis Group

UNDP. (1998). Human development report. New York. *Oxford University Press*. http://hdr.undp.org/sites/default/files/reports/259/hdr_1998_en_complete_nostats.pdf

UNDP. (2003). United Nation World water development report, (2003). http://www.unwater.org/publications/water-people-water- life/.

UNDP. (2006). Human development report (2006). Beyond scarcity power, poverty, and the global water crisis. UNDP New York. *Oxford University Press*. http://hdr.undp.org/sites/default/files/reports/267/hdr06- complete.pdf

UNDP. (2020). A UN framework for the immediate socio- economic response to COVID-19. New York, United Nation Development program.

UNESCO. (2003). The United Nations world water assessment program. The world water development report 1: Water for people, Water for life. Paris, UNESCO.

UNESCO. (2009). *United nation world water development report 3: Water in a changing world*. Paris, UNESCO.: https://unesco.unesco.org/ark:/48223/pf0000181993

UNESCO. (2015). The United Nation world water development report 2015: Water for

a sustainable world. (pp. 15-129). Paris, UNESCO.
UNESCO. (2016). United Nation world water development report 2016: Water and Jobs. (pp. 15-129). Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000181993
UNESCO. (2019). The United Nation world water development report 2019: Leaving no one behind. (pp. 1-187). Paris, *UNESCO*.
United Nations. (2007). Measuring Human Development, A Primer, New York.
WHO. (2007). World Health Organization. Economic and health effects of increasing coverage of low-cost household drinking-water supply and sanitation interventions to countries off-track to meet MDG target 10: Background document. *Human Development Report 2006*(No. WHO/SDE/WSH/07.05). *Geneva, World Health Organization*.
WHO. (2020). World Health Organization. Water, sanitation, hygiene and waste management for COVID-19: Technical brief. Geneva, *World Health Organization*. https://apps.who.int/iris/bitstream/handle/10665/331305/ WHO-2019-NcOV-IPC_WASH-2020.1-eng.pdf
World Bank. (2019). World development indicators. World Bank: *Washington DC*.
World Health Organisation. (1946). Constitution ofthe World Health, World Health Organization, New York.