

# Noncommunicable Diseases Prevention In Low- and Middle-Income Countries: An Overview of Health in All Policies (HiAP)

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## Abstract

Noncommunicable disease (NCD) causes about 35 million deaths and accounts for 60% of all deaths, of which 80% is in low- and middle-income countries (LMIC). NCDs will account for 80% of the global burden of disease by 2020 and account for 7 out of every 10 deaths in LMIC. NCD is no longer an emerging problem in developing countries, it's assuming an alarming dimension, and taking on the proportion of an epidemic. Several literatures document the known risk factors for significant NCDs. The critical risk factors are tobacco usage, unhealthy diet, physical inactivity, and detrimental usage of alcohol. To reverse the trend that leads to an increase in poor dietary patterns, sedentary lifestyle, tobacco use, and harmful alcohol use will need policies that transcend the health sector and policy change in different areas such as finance, urban planning, education, agriculture, and transportation.

## Keywords

low- and middle-income countries, noncommunicable diseases, health in All Policies, sedentary lifestyle, risk factors, developing countries, city planning, global burden of disease, diet, income, tobacco use, transportation, agriculture

### What do we already know about this topic?

In public health science, it is well noted that health is rooted extensively in the society; an idea that lends credence to the concept of Health in all policies. Well-documented research has contributed to this topic.

### How does your research contribute to the field?

My script creates a paradigm for future studies of tackling noncommunicable diseases using a sector-wide approach.

### What are your research's implications toward theory, practice, or policy?

Administrators and policymakers will be working from a shared knowledge base about the impact of NCD and why HiDP is critical in dealing with it in LMIC.

## Introduction

Noncommunicable diseases (NCDs) such as cardiovascular diseases, chronic respiratory diseases, cancer, obesity, diabetes, and mental illnesses are until recently, defined as a health problem of the rich and developed countries, and associated with economic development. However, current epidemiological data show NCDs to be on the rise in developing countries and contributes a higher number of mortalities in these countries.

NCD causes about 35 million deaths and accounts for 60% of all deaths, of which 80% is in low- and middle-income countries (LMICs). NCDs will account for 80% of the global burden of disease by 2020 and account for 7 out of every 10 deaths in LMIC.<sup>1,2</sup> NCD is no longer an emerging problem in developing countries, it's assuming an alarming dimension, and taking on the proportion of an epidemic. Several literatures document the known risk factors for significant NCDs. The critical risk factors are tobacco usage, unhealthy diet, physical inactivity, and detrimental usage of

alcohol. To reverse the trend that leads to an increase in poor dietary patterns, sedentary lifestyle, tobacco use, and harmful alcohol use will need policies that transcend the health sector and policy change in different areas such as finance, urban planning, education, agriculture, and transportation.

Evidence from many population-based epidemiological studies shows the risk factors for NCDs. Cancer, cardiovascular diseases, chronic respiratory diseases, obesity, and diabetes are lifestyle related and are preventable. However, it is simplistic to associate these diseases to individual lifestyle choices

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alone without taking into consideration factors such as globalization, industrialization, and urbanization. So, NCDs might be a lifestyle and environmental disease that does not link most times to an individual's behavior but because of societal changes in terms of economic transition, urbanization, globalization, and other known risk factors. These global changes have significant effects on a population's health and nutritional status, for LMICs in transition. Tackling NCDs requires multidisciplinary and multisectoral action to address these determinants and the complex interaction between individuals, communities, populations, and their environment. It requires a proper understanding of the social, economic, cultural, and political determinants of health. And the aging population for initiation of policy and program interventions.<sup>3</sup> Therefore, any effective prevention strategy must target these risk factors and promote opportunities for a healthy lifestyle. And policy change in unfamiliar areas such as finance, urban planning, education, agriculture, and transportation.<sup>4</sup>

A population-wide intervention tackling the risk factors is workable and can lead to considerable reductions in NCDs burden. The increasing trend of NCDs in LMICs, the cost of management, coupled with the difficult task of dealing with infectious diseases on an already stretched health systems, makes prevention the primary focus of all efforts to curtail and reduce the NCD scourge. Prevention at the primary health presents the best buy for NCDs in these settings. Rather than another vertical program that disintegrates the health system.

In public health science, it is well noted that health is rooted extensively in society—an idea of prominence with the WHO report on the Social Determinants of Health (SDH). A notion earlier replete in the Health for All Strategy of the WHO in 1979 that emphasized intersectoral action as a mechanism for achieving its primary health vision.<sup>5</sup> The Ottawa Charter also identified critical areas for health promotion actions. That put health on the agenda of policymakers in all sectors and at all level, instructing them to recognize the health consequences of their decisions and accept their responsibility for health.<sup>6</sup> Indicative that the health sector lacks direct influence over many determinants of health outside the health sector.

Health in All Policies (HiAP) was the central theme in the field of health during the Finnish EU presidency in 2006.<sup>7,8</sup> Buttressed the notion that policies in other sectors other than health have far-reaching effects on health outcomes. The idea is to strengthen policy implementation that considers health determinants controlled in other areas: finance, agriculture, education, urban planning, transportation, and trade. It looks for a win-win situation, where the health and well-being of the nation are improved and at the same time wealth creation. Through structures and actions originating solely from other sectors other than health, this strategy has been used before in Finland. The Finns used it in decreasing the burden of cardiovascular disease in Finland and would be most relevant in tackling other NCDs that share modifiable risk factors.<sup>9</sup> The strategy conceptualizes the role of actors,

actions, and determinants that can sway policies relating to NCDs. The HiAP framework will be applied to identify needed plans for the prevention of NCDs in LMICs.

This article will aim to briefly analyze the argument for HiAP in preventing NCDs in LMIC, identify health determinants in other sectors directly linked with NCDs. It will also propose policy changes directed toward preventing and controlling the current trend of NCDs in LMIC.

## Discussions

### *The Problem*

LMICs have the highest number of deaths related to NCDs; it accounts for 80% of the 60% NCD deaths worldwide, according to data from the WHO.<sup>10</sup> It projects global deaths to increase by 15% between 2010 and 2020; the LMICs will have the highest increase, where the African region will see an increase of over 20%.<sup>11</sup> Lopez et al. also showed that cardiovascular disease burden per head in LMICs increased between 1990 and 2001.<sup>12</sup> The LMICs accounts for over 80% of cardiovascular and diabetes deaths, and 90% of all COPD deaths worldwide. Cervical cancer is the leading cause of cancer deaths among women in Sub-Saharan Africa. Over two-thirds of the cancer deaths are in LMICs, where the incidence will rise to 14.3 million in 2030 provided the current global cancer rate remains the same. 48% of all NCDs deaths in the LMICs occur in persons under the age of 70, compared to 26% in high-income countries.<sup>12</sup> Around 26% of NCD-related deaths occur in persons below the age of 60 as compared to 13% in high-income countries. One literature showed that half of the cardiovascular deaths in Sub-Saharan Africa occur among persons aged between 30 and 69 years.<sup>13</sup> One-quarter of all deaths attributed to NCDs occur among people aged below 60 years.<sup>11</sup> These calls for concern that NCDs is more concentrated among the more impoverished population. Having effects on all age distributions.

This phenomenon portends grave economic consequences for the LMICs in terms of productivity loss and the enormous cost of long-term treatment associated with NCDs, and the potential vicious cycle of driving families and societies to poverty. The World Economic Forum's 2009 report explains that NCDs to a high degree presents the most threat to economic development. The NCD cost for 2010 is a staggering US\$30 trillion (Table 1), or 48% of the global gross domestic product (GDP).<sup>14</sup> A clear picture of NCDs capabilities to push millions of people into poverty, most likely in the LMICs where millions are already grappling with poverty.

The direct medical cost of treatment and loss of productivity related to NCDs has reduced the quality and quantity of the labor market and human capital.<sup>15</sup> A report on the macroeconomic impact of NCDs shows that the cost of medical treatment for NCDs: coronary heart diseases, hypertension, diabetes, obesity, and stroke in China stands at about US\$3 billion. It costs Brazil US\$72 billion yearly for treatment and

**Table 1.** Projected Noncommunicable Diseases Economic Burden 2011 to 2030 (Trillions of US\$ 2010).

Country income group	Diabetes	Cardiovascular disease	Chronic respiratory diseases	Cancer	Total
High	0.98	8.5	1.6	5.4	16.4
Upper-middle	0.6	4.8	2.2	2.3	9.9
Lower-middle	0.2	2.0	0.9	0.5	3.6
Low	0.0	0.3	0.1	0.1	0.5
Low-and-middle-income countries	0.8	7.1	3.2	2.9	14
World	1.7	15.6	4.8	8.3	30.4

Source: World Economic Forum/Harvard School of Public Health.

loss of productivity associated with NCDs.<sup>16</sup> It projects the direct cost of diabetes in terms of treatment cost to reach a whopping US\$300 billion by 2030 in the LMICs, which will shoulder 45% of diabetes cases. This estimate is lower based on the difficulties of estimating the 2030 costs in some countries.<sup>14</sup> Chronic obstructive pulmonary diseases (COPDs), which refer to a group of progressive lung diseases (eg, bronchitis, emphysema, and asthma) have a direct medical cost of about US\$2.1 trillion. We expect the price to rise to US\$4.8 trillion in 2030. The LMICs contribute half the global costs for COPD.<sup>14</sup>

These are the leading risk factors in order of magnitude: raised blood pressure (13%), tobacco use (9%), elevated blood glucose (6%), physical inactivity (6%), and overweight and obesity (5%).<sup>11</sup> It is important to reiterate that all these factors, to some extent, are individual lifestyle related. However, it is vital to highlight the lack of studies tailored toward understanding relations between personal lifestyle, environment, and policies associated with NCDs in LMICs. Notwithstanding, several determinants of health outside the domain of the health sector identified in various literature aggregated determinants of NCDs.

### The Idea

Several studies documented health determinants and policy outside the health sector, related to health and well-being. Identification of these determinants led to advocacy toward adopting the intersectoral approach in dealing with the health of the population. However, experts in health policy still do not readily grasp the term HiAP.<sup>17</sup> Therefore, research and development in health policies are still mainly within the health sector. HiAP aims to improve evidence-based policy-making by focusing on strategies rather than on projects or programs.<sup>18</sup>

The health sector deals with diseases, but, most often in terms of health determinants, other sectors play pivotal roles. Ollila says that an essential key to HiAP lies in the exceptional ability to analyze all policies based on its implication for health and not confined within the health sector.<sup>19</sup> Such analysis requires a good understanding of content, context, process, and the actors in international and national policy environment.<sup>20</sup> It is vital for understanding the process

related to policy development and as well as identify windows of opportunity for policy change.

However, a win-win strategy can aim at policies that benefit all actors: as seen in areas such as education, sanitation, hygiene, and the environment.<sup>18</sup> Such a strategy was used in France and Finland in combating the scourge of 2 NCDs (cancer and cardiovascular diseases) and proved much useful. It identified policies outside the health sector and addressed their adverse health consequences.

The high number of cancer mortality reported in an EU report brought about the French Cancer Plan of 2003. The plan, among other strategies in the health sector, employed the HiAP initiative by setting target outside the health sector in the drive to reduce the number of cancer mortalities. It took on a policy that increased the price of tobacco by 45% and banned the sales of cigarettes to persons under the age of 16 years. This action reduced the number of smokers, over 1.8 million people in the first 2 years of implementation.<sup>21</sup> As part of the plan, policies were made that required a health risk warning on food and drinks packaging and mandated the ban of all food and drinks vending machines in schools. The plan acknowledged the links between health and environmental factors<sup>22</sup> and focused chiefly on public education, which enabled collaboration between the Ministries of Health and Education, to create and implement programs that raise public awareness about risky behaviors related to cancer.

In North Karelia, Finland, in 1972, the North Karelia Project was launched as a means of curtailing the high incidence of cardio vascular disease (CVD) in the area. The project's main aim was to change lifestyle related-risks through community-based actions involving different sectors and different policies. It targeted change in diet to lower high blood cholesterol levels by educating the populace to reduce saturated fat and salt intake. It later cumulated into a national program in 1977 which brought about policy change in other sectors; agriculture and food industry. A collaboration with Ministries of Commerce and Agriculture increased the availability and consumption of fruits and vegetable through the Berry and Vegetable Project.<sup>23</sup> The program led to an improvement in the quality of diets in Finland. Statistics showed a reduction in the number of people that used butter on their bread from 90% of the population in 1972 to less

than 5% in 2009. The butter consumption per capita reduced from about 18 kg in 1965 to 3 kg in 2005. Dietary changes in Finland led to a massive reduction in cholesterol level with 80% reduction in annual CVD mortality among the working-age population.<sup>9</sup>

These examples show the HiAP strategy adopted in these countries, mostly implemented outside the health sector, with collaborations between the health and other areas in preventing disease. The idea is to change unhealthy behaviors, and the right policy interventions in the economic, social, and environmental sector, it is inexpensive and permanent. Against focusing on the narrow realms of diseases and medical care, an essential idea in fighting the menace of NCDs in LMIC.

For preventive action relevant to curbing selected NCDs; ischemic heart diseases, cardiovascular disease, and lung cancer, tobacco control is at the forefront. Smoking causes a large percentage of coronary heart diseases, CVD, and lung cancer. Around 33% of all ischemic heart disease, 35% of CVD, and 83% of lung cancer are caused by smoking among persons aged 35 and 65 years.<sup>24</sup> Tobacco use is one significant health risk that demands urgent actions through HiAP. Tobacco has both adverse effects for the smoker and passive smoker. One study estimated the effects of the tobacco control program in Washington, found a significant reduction in adult smoking and health condition associated with tobacco use. It counted more than \$1.5 billion in savings to the health sector in terms of medical cost and reported consistency in the 10-to-1 return in reduced health care costs related to the tobacco control program.<sup>25</sup> Still, some economic policymakers argue that cutting tobacco production and consumption has enormous financial consequences to governments in LMIC, showing the difficulties in initiating policy change. Nevertheless, this argument is scarcely valid. Rather these countries, if they fail to act, will lose a lot in terms of direct medical cost and productivity loss in the long run. Therefore, making it “illogical and irresponsible for economic policymakers to talk about economic growth and simultaneously ignore NCDs.”<sup>14</sup>

Studies in several countries of tobacco control policymaking have shown that the media plays a pivotal role in advocacy and support for tobacco control law reform.<sup>26,27</sup> Therefore, a case for greater involvement of the news media in raising public awareness. And in policy-oriented matters bordering on tobacco control program in LMIC in any drive to prevent NCDs. WHO Framework Convention for Tobacco Control's (FCTC) key objectives are to reduce demand in tobacco products through an increase in taxation, curtail smoking in public places through legislation, ban on tobacco advertising, health warning on tobacco packaging, and counter advertising.<sup>28</sup> These are all proven strategies for reducing smoking prevalence<sup>29</sup> and shows a positive effect in lowering tobacco-related health conditions, like ischemic heart disease,<sup>30</sup> CVD, and cancer.<sup>31</sup>

The FCTC has been in force in many LMICs,<sup>32</sup> but there are no national laws prohibiting tobacco use in public places. In countries where such rules are in existence, the challenges of implementation and enforcement arise. The current framework must be evaluated and modified to encourage collaborations and implementation of comprehensive tobacco control programs cutting across all sectors. Structures should be put in place to ensure enforcement of tobacco ban in public places and sale of tobacco products to minors.

## Conclusion

Noncommunicable disease is of grave concern, given the associated risk of substantial medical cost and productivity loss if the LMIC cannot act. The projections show that NCDs will make up the more significant burden of disease in the LMIC and can drive families and societies to poverty in already struggling economies. From a prevention perspective, the LMIC still have the window of opportunity open to reverse the trend of NCDs and avert tremendous losses. NCDs are multifactorial diseases that are not only dependent on individual lifestyle choice but also on the environment. Therefore, making its prevention multisectoral as the factors that cause NCDs are resident in different sectors outside of health. It is preventable through policies that consider its devastating effect on the society. Health in All Policies offers a credible platform vital to prevent NCDs. Public health experts should continue to forge alliance across all sectors and engage policymakers to ensure that policies that will tackle NCDs come into effect. It is vital to state that policy results from intricate economic, social, and political synergy and does not develop in a vacuum.<sup>20</sup> It is also useful to note that different actor's shape policy contained within the structure of policy context. Therefore, it is difficult to suggest a broad policy needs or change, as a silver bullet for preventing NCDs in LMIC, without considering the actors and the policy environment. Therefore, context-specific research on means of getting health on the agenda of other sectors to prevent NCDs is key.

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## Author Contributions

N.E. drafted critically reviewed and presented the final approved version to be published.

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## References

- World Health Organization (WHO) LC-PD. 2008-2013 Action Plan for the global strategy for the prevention and control of noncommunicable diseases. The six objectives of the 2008-2013 Action Plan are. World Health Organization; 2013. [http://whqlibdoc.who.int/publications/2009/9789241597418\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241597418_eng.pdf). Accessed May 20, 2020.
- World Health Organization. *The World Health Organization Report 2002: Reducing Risks, Promoting Healthy Life*. World Health Organization; 2002. <https://apps.who.int/iris/handle/10665/42510>. Accessed May 20, 2020.
- Regional Committee. Scaling up prevention and control of chronic noncommunicable diseases in the sea region : risk factors for noncommunicable diseases : results in the South-East Asia region (results from surveys using the WHO STEPS approach). July 9, 2007. [http://origin.searo.who.int/entity/non-communicable\\_diseases/documents/sea\\_ncd\\_79/en/](http://origin.searo.who.int/entity/non-communicable_diseases/documents/sea_ncd_79/en/).
- Caballero B. The global epidemic of obesity: an overview. *Epidemiol Rev*. 2007;29(1):1-5.
- OMS-WHO. Global strategy for health for all by the year 2000. *Series Salud Para Todos, N3*. 1981;90.
- Health Promotion International. Ottawa charter for health promotion. *Health Promot Int*. 1986;1(4):405-405. <https://academic.oup.com/heapro/article-lookup/doi/10.1093/heapro/1.4.405>. Accessed May 20, 2020.
- Ollila E, Ståhl T, Wismar M, Lahtinen E. Izlasīts un apstrādāts 16.11.2016.—Health in all policies in the European Union and its member states World Health Organization 2008, on behalf of the European Observatory on Health Systems and Policies. Observatory Studies Series No 13. <https://apps.who.int/iris/handle/10665/107909>. 2006.
- Commission of the European Communities. Paper W. WHITE PAPER together for health: a strategic approach for the EU 2008-2013. 2013;2013(2007). [https://ec.europa.eu/health/ph\\_overview/Documents/strategy\\_wp\\_en.pdf](https://ec.europa.eu/health/ph_overview/Documents/strategy_wp_en.pdf)
- Puska P, Ståhl T. Health in all policies—the Finnish initiative: background, principles, and current issues. *Annu Rev Public Health*. 2010;31(1):315-328.
- World Health Organization. The global burden of disease 2004 update. World Health Organization; 2004. [https://www.who.int/healthinfo/global\\_burden\\_disease/GBD\\_report\\_2004update\\_full.pdf](https://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf). Accessed May 20, 2020.
- Chan M. Global status report on noncommunicable diseases. Geneva, Switzerland: World Health Organization; 2010.
- Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJL. Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. *Lancet* 2006;367(9):1747-1757.
- Steyn K, Damasceno A. Levels and Trends of Adult Mortality [Internet]. Disease and Mortality in Sub-Saharan Africa; 2006. <https://pdfs.semanticscholar.org/37df/471bb6676676be0284258cca14ee0e366320.pdf%0A>. Accessed May 20, 2020.
- Bloom DE, Cafiero ET, Jané-Llopis E, et al. The global economic burden of noncommunicable diseases. Working Paper Series 87. Geneva, Switzerland: World Economic Forum; 2012. <http://www.hsph.harvard.edu/pgda/working.htm>. Accessed May 20, 2020.
- Mayer-Foulkes D. A survey of macro damages from non-communicable chronic diseases: another challenge for global governance. *Glob Econ J*. 2011;11(1):1-27. <https://ideas.repec.org/a/bpj/glecon/v11y2011i1n6.html>. Accessed May 20, 2020.
- Valentin Fuster AC. Committee on preventing the global epidemic of cardiovascular disease : meeting the challenges in developing countries. In: Board on Global Health, Valentin Fuster, Bridget B. Kelly, eds. *Promoting Cardiovascular Health in the Developing World: A Critical Challenge to Achieve Global Health*. Washington, DC: National Academies Press; 2010:275-315.
- Lindström B, Eriksson M. The salutogenic approach to the making of HiAP/healthy public policy: illustrated by a case study. *Glob Health Promot*. 2009;16(1):17-28. <http://journals.sagepub.com/doi/10.1177/1757975908100747>. Accessed May 20, 2020.
- Ståhl T, Wismar M, Ollila E, Lahtinen E, Leppo K. Health in all policies prospects and potentials on health systems and policies European. [http://www.euro.who.int/data/assets/pdf\\_file/0003/109146/E89260.pdf](http://www.euro.who.int/data/assets/pdf_file/0003/109146/E89260.pdf). Accessed May 20, 2020.
- Ollila E. Health in all policies: from rhetoric to action. *Scand J Public Health*. 2011;39(6 suppl.):11-8. <http://www.ncbi.nlm.nih.gov/pubmed/20813799>. Accessed May 20, 2020.
- Walt-G Gilson-L. Reforming the health sector in developing countries: the central role of policy analysis. *Health Policy Plan*. 1994;9(4):353-370.
- Beishon M. David Khayat : driving the French cancer plan. 2006(August):4-11. *Cancer World*. [https://cancerworld.net/wp-content/uploads/2017/07/8272\\_04\\_11\\_cw13\\_coverstory.pdf](https://cancerworld.net/wp-content/uploads/2017/07/8272_04_11_cw13_coverstory.pdf).
- Wismar M, McKee M, Ernst K. Health targets in Europe. 2008;302(6783):980-981. <https://apps.who.int/iris/handle/10665/107909>. Accessed May 20, 2020.
- Kuusipalo J, Mikkola M, Moisio S, Puska P. The East Finland berry and vegetable project: a health-related structural intervention programme. *Health Promot Int*. 1986;1:3:385-391.
- Lightwood JM, Glantz SA. Declines in acute myocardial infarction after smoke-free laws and individual risk attributable to secondhand smoke. *Circulation*. 2009;120(14):1373-1379.
- Dilley JA, Harris JR, Boysun MJ, Reid TR. Program, policy, and price interventions for tobacco control : quantifying the return on investment of a state tobacco control program. *Am J Public Health*. 2012;102(2):22-28.
- Harris JK, Shelton SC, Moreland-russell S, Luke DA. Tobacco coverage in print media : the use of timing and themes by tobacco control supporters and opposition before a failed tobacco tax initiative. *Tob Control*. 2010;19:37-43.
- Smith KC, McLeod K, Wakefield M. Australian letters to the editor on tobacco: triggers, rhetoric, and claims of legitimate

- voice. *Qual Health Res.* 2005;15(9):1180-98. doi:10.1177/1049732305279145.
28. WHO Framework Convention on Tobacco Control. Article 5-8 and 11-1. Geneva, Switzerland: World Health Organization; 2003.
29. Centers for Disease Control and Prevention. Best practices for comprehensive tobacco control program. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014. [https://www.cdc.gov/tobacco/stateandcommunity/best\\_practices/pdfs/2014/comprehensive.pdf](https://www.cdc.gov/tobacco/stateandcommunity/best_practices/pdfs/2014/comprehensive.pdf). Accessed May 20, 2020.
30. Barnoya J, Glantz S. Association of the California Tobacco Control Program with declines in lung cancer incidence. *Canc Causes Contr.* 2014;15:689-695.
31. Cowling DW, Yang J. Smoking-attributable cancer mortality in California, 1979-2005. *Tob Control.* 2010;19(suppl 1):i62-i67. doi:10.1136/tc.2009.030791
32. FCTC. Parties to the WHO framework convention on tobacco control. 2017. [https://www.who.int/fctc/signatories\\_parties/en/](https://www.who.int/fctc/signatories_parties/en/). Accessed May 20, 2020.