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Examining the Impacts Of COVID-19 On Food and Nutrition Security Among Front Line Food Industry Workers in Kenya and India and the Potential Role of Workforce Nutrition in Mitigating These Challenges: A Thematic Analysis

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Abstract

Impacts Of COVID-19 On Food and Nutrition Security Among Front Line Food Industry Workers in Kenya and India and the Potential Role of Workforce Nutrition in Mitigating These Challenges: A Thematic Analysis

By Chantal Carty

Introduction: According to the 2020 Global Nutrition Report, 1 in 9 people globally are hungry or undernourished. Poor diets and resulting malnutrition are responsible for much of the world's global burden of disease. Food security, therefore, is a necessary and critical element for good health in all populations. The COVID-19 pandemic has significantly disrupted food infrastructures globally. Collectively, these impacts have exacerbated nutrition-based diseases and poor health outcomes, primarily in Low- and Middle-Income Countries. In response, the Global Alliance for Improved Nutrition (GAIN) issued an emergency grant program –Keeping Food Markets Working (KFMW), to food sector companies in its partner countries. This research examined the implementation process and outcomes of the grant program in order to compare and contrast the impacts of COVID-19 on the food systems in Kenya and India with a particular focus on the role of workplace-based interventions in addressing challenges to food and nutrition security

Methods: Semi-structured key informant interviews were conducted with GAIN country office personnel and company leadership from the grantee organizations. Structured beneficiary surveys were administered to employees within the organizations. Interviews were conducted virtually by the Emory University Research team and in country research partners. They were recorded, transcribed, and thematic analysis was conducted to identify patterns and themes across the data.

Results: COVID-19 had detrimental impacts on the Kenya and India's food infrastructures and on the livelihoods of front-line food workers in the countries. Interview participants and survey respondents expressed overall satisfaction and gratitude for the KFMW grant. They found it helpful at temporarily alleviating food and nutrition insecurities caused by the pandemic. Companies also saw increases in workers' motivation and productivity as a result of the grant. The most notable critique offered was that the grant period was too short to make a sustained impact.

Conclusions: The KFMW grant program was an overall success at supporting COVID-19 induced food and nutrition needs among food industry workers. The implementation of this grant by employers demonstrated the high potential and ability for workforce nutrition interventions to practically and effectively improve and protect the food and nutrition security of millions of workers worldwide.

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Chapter 1: Introduction

Introduction and Rationale

According to the 2020 Global Nutrition Report, 1 in 9 people globally are hungry or undernourished, this represents an increase of approximately 118 million people compared to 2019 (Micah et al., 2020). Poor diets and resulting malnutrition are responsible for much of the world's global burden of disease (Afshin et al., 2019). Food and nutritional security, defined by the United Nations' Committee on World Food Security, means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious foods that meet dietary needs for an active and healthy lifestyle. Food and nutrition security, therefore, is a necessary and critical element for good health in all populations. For this reason, in 2012, the 65th World Health Assembly (WHA) endorsed an implementation plan on maternal, infant, and young child nutrition specifying six global nutrition targets by 2025. The targets aimed to address issues of anaemia in women of reproductive age, low birth weight, exclusive breastfeeding (EBF), and childhood obesity, stunting and wasting (WHO Global Targets, 2021). The 2021 Global Nutrition Report found that most countries worldwide have not made sufficient progress to meet the nutrition targets by 2025 revealing that there is in fact an exceptionally large proportion of the world's population still affected by all forms of malnutrition. Namely, there are approximately 149.2 million children under five years old who are stunted, 570.8 million anaemic girls and women of reproductive age, and 2.2 billion overweight adults, of which 1.2 billion suffer from hypertension and 538.7 million are diabetic (Di Cesare et al., 2021).

Much of the impediments in the global effort to address malnutrition over the last two years are attributable to the ongoing COVID-19 pandemic. The pandemic has introduced unparalleled

challenges globally and has caused significant disruptions to food infrastructures in many regions around the world. This has resulted in increased food prices, food shortages, and increased consumption of poor sources of micronutrients. Collectively, this impact on food systems has exacerbated nutrition-based diseases and poor health outcomes, primarily in Low- and Middle-Income Countries (LMICs) and for the most vulnerable populations within these countries (Bett, 2021). In Kenya for example, a survey conducted by the Centre for Agriculture and Biosciences International (CABI) in September 2020 revealed a 38% increase in the number of Kenyans that were food and nutrition insecure since onset of the pandemic (Kansiime et al., 2021).

The Global Alliance for Improved Nutrition (GAIN) responded to pandemic by developing the Keeping Food Markets Working (KFMW) Program. This program was designed to provide rapid support food and nutrition support to front line food system workers in GAIN's partner LMICs through the provision of emergency grant funds to select food sector companies. A particular focus was placed on essential food systems workers because this population has been especially affected by the pandemic. In Africa and Asia for example, where the food systems have undergone significant disruptions due to COVID-19, workers in this sector are crucial in keeping the food infrastructures stable and operational to prevent further and potentially irreparable harm to food and nutrition security globally. The KFMW delivery platform served as an example of how the workforce can potentially be an ideal and essential mechanism through which to practically address the food and nutrition needs of countless people worldwide and particularly during a global pandemic.

Problem statement

Historically, food and nutrition insecurity have plagued many communities around the world. Some of those most affected by these issues and their resulting health consequences are located in LMICs such as Kenya and India. Annually, about 35% of Kenya's population is affected by food insecurity and malnutrition, the 2021 Global Hunger Index score indicated that the level of existing hunger in the country was serious (Bradbury, 2021). As for India, though the country boasts one of the world's largest economies it is also home to the largest number of undernourished people. The country accounts for about 15% of the world's total undernourished population, and most recent estimates indicated a severe food insecurity prevalence of approximately 31.6% (United Nations in India: Nutrition and Food Security, 2021; Drishti Indian Administrative Services, 2021). Nutrition related health problems including wasting, stunting, and noncommunicable chronic diseases are also of major concern in these regions. The COVID-19 pandemic has significantly worsened the already fragile state of food and nutrition in these countries over the past two years. This has subsequently threatened worsened health outcomes especially for vulnerable individuals such as front-line low wage workers in the food sector. As the pandemic continues, food and nutrition challenges in Kenya and India will worsen if appropriate action is not taken, workplace-based nutrition programming may potentially serve as an ideal solution to address this critical issue.

Research question

How can workplace-based nutrition programming address COVID-19 induced food and nutrition related challenges among vulnerable front line food system workers in Kenya and India?

Purpose Statement

The purpose of the research presented in this paper is to analyze the impact of the current COVID-19 pandemic on the food systems in Kenya and India with a particular focus on the role of workplace-based interventions in mitigating impacts on food and nutrition security related health outcomes. The research will explore the spectrum of outcomes associated with workforce nutrition through examination of historical and current practices. It will also give attention to future implications and potential expansion of workforce nutrition in Kenya and India informed by the literature and data.

Significance Statement

This research is innovative in its intersecting of the COVID-19 pandemic with food and nutrition security among vulnerable populations, an emergency grant program in LMICs, and workplace-based nutrition programming. More over, it is timely. The COVID-19 pandemic is unprecedented and has left countless people worldwide grappling for answers on how best to slow its spread, mitigate its impact, and ultimately recover from its ongoing social, economic, and political disruptions. One such ongoing disruption has been observed in global food supply chains. The U.S. Global Leadership Coalition has found that the pandemic has exacerbated food insecurity in almost all countries through a combination of reduced household income and food supply chain disruptions. Per the World Food Programme, in the two years since its onset, the number of people experiencing severe food insecurity has double from 135 million before the pandemic to 276 million. This number is estimated to rise to 323 million by the end of 2022 due to the compounding effects of ongoing global crises aggravated by the pandemic (Greb et al., 20220)

Workforce centered nutrition interventions offer a unique pathway through which such pandemic induced nutritional challenges can be addressed. While workforce nutrition is not a novel phenomenon, now more than ever, it can be leveraged by many employers as a tool to bring awareness and access to nutritional health. This approach is significant for several reasons. Namely, an estimated 58% of the global population will spend one-third of their adults lives at work and can therefore be easily and frequently reached via workplace nutrition efforts (The Workforce Nutrition Alliance, 2020). Additionally, healthy workforces have been associated with improved company outputs indicating the mutually beneficial nature of workforce nutrition for employers and workers. Lastly, there is no finite time frame for the COVID-19 pandemic, new variants have continued to emerge resulting in recurrent spikes in infection cases globally. This has in turn prolonged the world's economic and health systems recovery.

Definition of terms

Food security – this exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life.

Nutrition insecurity - a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Workforce nutrition – Programming that works through the existing structures of the workplace to address fundamental. aspects of nutrition amongst employees and/or supply chain workers.

Abbreviations/Acronyms:

CDC- Centers for Disease Control and Prevention

COVID-19 – Coronavirus Disease 2019

EBF – Exclusive breastfeeding

FAO - Food and Agricultural Organization

GAIN – Global Alliance for Improved Nutrition

HIC – High Income Countries

ILO – International Labour Organization

KFMW – Keeping Food Markets Working

LMIC – Low- and Middle-Income Countries

NCD – Noncommunicable chronic disease

SOFI – The State of Food Security and Nutrition in the World Report

WFN – Workforce nutrition

WFP – World Food Programme

WHO – World Health Organization

Chapter 2: Review of the Literature

COVID-19 Pandemic

On December 31, 2019, the World Health Organization (WHO) Country Office in the People's Republic of China became aware of a media statement released by the Wuhan Municipal Health Commission (World Health Organization, 2021). The report noted a cluster of hospitalized individuals suffering from an unidentified form of viral pneumonia among patients who had a shared history of having previously visited the Huanan Seafood Market in Wuhan City (Peeri et al., 2020). Two weeks later, it was determined that the outbreak was caused by a novel coronavirus not previously identified in humans, the new variant was named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), COVID-19 is the moniker assigned to the disease caused by the virus (Khanna et al., 2020). The virus made its way to 18 countries over the following weeks and by January 30th, WHO declared the outbreak a Public Health Emergency of International Concern (PHEIC). COVID-19 continued to spread rapidly and by March 11th had reached 113 countries, at this time, concerned by the virus' reach and severity, WHO characterized it as a pandemic (World Health Organization, 2020).

Compared to previous outbreaks of a similar nature such as that of SARS (Severe Acute Respiratory Syndrome) in 2002 and MERS (Middle East Respiratory syndrome coronavirus) in 2012, COVID-19 has spread more rapidly. Reasons for this include increased globalization and the initial outbreak location of Wuhan, China. This region is a sprawling epi-center readily connected to other parts of the country via railways and a busy international airport. Unimpeded air and rail travel in conjunction with the timing of the outbreak during the Chinese New Year

gave way to rapid transmission of the virus throughout the country and eventually, the globe (Peeri et al., 2020).

Delays in detection of and response to the virus have been identified in several countries. Such delays were the leading causes of the overburdening of many local health systems during the early stages of the pandemic (Khanna et al., 2020). Conversely, some countries enacted swift and effective emergency response measures and have so far recorded relatively low numbers of infections and deaths since the outbreak began. Strategies that have been found to be most effective at slowing the spread of the virus so far include vaccination, social distancing, mask wearing, proper hand hygiene, self-isolation, lockdowns and travel restrictions, and contact tracing (Cheng et al., 2020; Khanna et. al, 2020; Peeri et al., 2020).

Negative impacts of the COVID-19 pandemic have and continue to permeate globally. Widespread unemployment, increased food and nutrition insecurity, disruption in the global supply chain and increased social inequality are several ways in which the pandemic's long-standing impacts have been experienced worldwide (Cheng et al., 2020). At present, there have been approximately 292.6 million confirmed cases and 5.45 million deaths since the outbreak began (Ritchie et al., 2021). Several variants, mutated versions of the original SARS-CoV-2 strain, have emerged, the most notable of them being the Delta and Omicron variants. Both have been labeled by the Centers for Disease Control and Prevention (CDC) as "variants of concern" with the former first identified in India in late 2020 and the latter in Botswana and South Africa in late 2021 (CDC, 2021; Katella, 2021). Both variants have proven more transmissible than the original virus. Precautionary measures such as mask wearing and the introduction of FDA-authorized COVID-19 vaccines in December 2020 have led to intermittent decreases in infection levels throughout the course of the pandemic. Conversely, emergence of new variants coupled

with everchanging governmental guidance and widespread non-adherence to precautionary measure have resulted in several surges (Maragakis, 2021). Presently, much of the pandemic-oriented efforts are geared towards understanding the more recent Omicron variant and its implications for the world's future.

COVID-19 Profile in Kenya and India

Kenya

The devastating economic and health impacts of the COVID-19 pandemic have not been equitably distributed globally. Rather, many Low- and Middle-Income Countries (LMIC) have been disproportionately affected by the pandemic induced economic and health downturns (USGLC, 2021). In several LMICs, economic strife has resulted in major food system disruptions. While many OECD (Organization for Economic Co-operation and Development) countries have acted to protect their food infrastructures through measures such as market regulation and emergency food distribution programs, most LMIC governments have lacked the resources to follow suit. Kenya and India are representative of the latter situation and to appropriately understand the ongoing impact of COVID-19 on their food and nutrition systems, it is necessary to first understand the regions' COVID-19 profiles.

In March 2020 when the SARS-CoV-2 virus reached East Africa, Kenya's government took swift action to reduce and contain its spread. Since that time, the country has experienced several waves in confirmed infection cases, but statistics indicate that the rapid and stringent responses have been beneficial. Overall, the country has consistently remained in the low to middle ground globally for confirmed cases and deaths when compared to all other countries for which data is available. As of early January 2022, Kenya has documented 306,686 confirmed cases and 5,411 deaths cumulatively. The case fatality rate, the number of confirmed deaths divided by the

number of confirmed cases, currently sits at 1.8% (Ritchie et al., 2021). Data also shows that Kenya has so far experienced four waves of infection and is currently undergoing a fifth. The newest surge is attributable to the highly transmissible Omicron variant in conjunction with low vaccination levels, the recent holiday season, and loosening of lockdown restrictions in recent months (Dahir and Moyo, 2021).

The first case of COVID-19 was confirmed by the Kenyan Ministry of Health in Nairobi on March 12, 2020. Three days later, President Uhuru Kenyatta announced the first set of lockdown measures calling for suspended travel into Kenya from countries with reported cases. While Kenyan citizens and residents with valid documentation were still allowed to enter the country, they had to adhere to a 24-day self-quarantine upon arrival. Additional lockdown procedures implemented at this time included suspension of large public gatherings and complete closures of all learning institutions, including boarding schools and universities. The President urged government offices and companies to allow employees to work from home where possible with the exception of critical or essential workers. Hospitals, food retail stores, shopping malls, and public transportation remained operational with the stipulation that regular cleaning and hand hygiene accommodations be provided (Address to The Nation By H.E. Uhuru Kenyatta, 2020). On March 25th, all international flights in and out of the country were suspended and a 7pm to 5am (dusk to dawn) curfew was implemented. Over the next several months, the Kenyan government modified the lockdown measures oscillating between tightening and loosening restrictions. A significant element of Kenya's emergency response pertaining to the overall impact on the food system is that of restricted movement. In reaction to case surges, several movement restrictions in and out of key regions including Nairobi were enforced for months

long stretches. Similarly, though the exact hours were periodically adjusted, the nationwide curfew implemented in March 2020 remained until October 2021 (Genga, 2021).

Kenya received its first shipment of the AstraZeneca-Oxford two dose COVID-19 vaccine in March 2021. The vaccines were produced by the Serum Institute of India, the world's largest vaccine manufacturer, and UNICEF was responsible for their procurement and distribution in Kenya (WHO: Regional Office for Africa, 2021). Vaccine administration in Kenya began on March 5, 2021, at which time the country was undergoing a third surge in the COVID-19 infection rate. Though a three-part phased approached was planned for vaccine distribution, this surge fast tracked the second phase prioritizing essential workers and all individuals 58 years and older. Unfortunately, vaccine efforts came to a halt in mid-May due to a supply shortage resulting from an export restriction in India who at the time was experiencing its second wave of cases (Feleke et al., 2021; Ritchie et al., 2021). Less than 2% of the country's population of 52 million had received their first dose at this time. In the following months, several shipments of vaccines were donated to Kenya from countries including France, Denmark, Greece, and the United Kingdom. Kenya has since resumed its vaccine administration and has evolved to offering booster shots for those who are eligible. Despite this turn around in supply, the country's vaccine rate remains low on the global stage. With only approximately 8.2% (4.2 million) of the population currently fully vaccinated, there is still much headway to be made towards the country's goal of having the total adult population inoculated by the end of 2022 (Ritchie et al., 2021).

India

The first case of COVID-19 in India was reported on January 30th, 2020, it was followed by two others in the subsequent days. All patients shared a history of having recently traveled to Wuhan,

China (Khanna et al, 2020). A sharp increase in infections came soon after in March. The Ministry of Health and Family Welfare (MoHFW) quickly issued a travel advisory where in all international travelers entering India had to adhere to a 14-day self-quarantine and a suspension was placed on all travel visas to other countries. Additionally, the Epidemic Disease Act was invoked in many states, which in short, allowed officials to close public spaces and quarantine suspected infection cases (Khanna et al., 2020). Further guidelines were developed as part of an intensive campaign to halt the spread of the virus. Principal attention was given to personal hygiene, laboratory testing, quarantining, contact tracing, and surveillance. People were advised against mass gatherings and visiting locations where live animals were raised or slaughtered. Health care facilities suspend all, but emergency services and providers were encouraged to utilize telemedicine services. Places such as schools, stadiums, and hotels were transformed into quarantine facilities while several hospitals throughout the country shifted to solely handling COVID-19 related illnesses (Khanna et al., 2020). On March 22nd, Prime Minister Narendra Modi introduced the Janta or self-imposed curfew urging residents to observe a 14-hour lockdown period from 7am to 9pm. Several days after, in a televised speech, he announced a complete country wide lockdown which was intended to last for 21 days. Ultimately, the lockdown lasted for 75 days after numerous extensions (Singh, 2020).

Similar to Kenya, India has had several waves of COVID-19 cases, the first ramped up after lockdown restrictions were eased in June 2020. As numbers fell significantly towards the end of the year, the country was awash with a sense of hope about nearing the end of the pandemic. Mass gathering public events including elections and cricket matches were held with little to no adherence to COVID safety measures. This, in conjunction with the emergence of the Delta variant soon gave way to the second wave which has so far proven to be the most ravaging for

the country. It occurred between April and July 2021, reaching a spike in May, at which time over 400,000 new cases were being reported daily (Ritchie et al., 2021). The health system fractured as the supply of hospital beds, medicines, oxygen, and other health essentials severely dwindled (Lahoti, 2021). Despite the country's grim circumstances, Prime Minister Modi resisted pressure to institute another national lockdown, instead leaving it up to individual states to decide. Data suggests that India may be entering a third wave of infection cases due presumably to the Omicron variant. Presently, the country has the second highest number of cumulative confirmed cases among all countries for which data is available at roughly 35.2 million. Approximately 482, 000 cumulative deaths have been recorded, however analyses performed by the Center for Global Development suggest that due to severe flaws in India's reporting, the true number likely lies between 3.4 and 4.7 million (Pathak et al., 2021; Ritchie et al., 2021)

India began administering COVID-19 vaccines in January 2021. Given the in-country production of vaccines at the Serum Institute, India unlike Kenya did not have to wait for vaccine shipments. However, the country's COVID vaccine rollout has not been without obstacles. Namely, the Serum Institute's initial vaccine production fell short of what was needed to meet both global and domestic needs. Reasons cited for this deficit included price caps, lack of raw material inputs, and fire damage to parts of the facility. So, despite contributing 60% of the global vaccine supply, India faced a major vaccine shortage shortly after the country's inoculation program began (Frayer, 2021). Additional challenges encountered included difficulties with getting vaccine appointments, vaccine hesitancy, and unaffordability. The domestic shortage was primarily rectified when the government drastically reduced vaccine exports and instead re-directed the supply to meet in country needs. Progress in the vaccine effort has been made with

approximately 44% (618 million) of the population currently fully vaccinated (Ritchie et al, 2021). Now however, the foremost challenge in the vaccine regime is a slowdown in demand induced by lingering vaccine hesitancy.

Food and Nutrition profiles in Kenya and India

Kenya

The agricultural sector is the mainstay of the Kenyan economy and overall food infrastructure, serving as the primary source of income for over 75% of the country's rural population and accounting for 30% of its annual gross domestic product (GDP) (European Commission Joint Research Centre, 2021). Unfortunately, the sector is highly susceptible to climate shocks such as frequent droughts and sporadic rainfall patterns, this is especially problematic given that most planted crops are rain dependent. Pests, weeds, and crop diseases also pose significant threats to the resulting quality and quantity of the agricultural yield (World Food Program Kenya, 2021). This is especially true for the arid and semi-arid regions which constitute 80% Kenya's land, consequently, only about 20% of the nation's total land is suitable for farming. Smallholder farmers are an essential part of the country's agricultural fabric, they account for 70% of the total farming population and 75% of national food output. In spite of this, most smallholder farmers lack sufficient farming inputs, finances, knowledge, and other elements to ensure sustained agricultural success (Chowdhury, 2020). The circumstances of smallholder farmers in conjunction with environmental difficulties have for many years resulted in sub-optimal outputs. Simultaneously, other inefficiencies in the country's food systems have resulted in increased prices and inadequate market supply. While a reform to the agricultural sector has been underway in Kenya since 2013, the country has continuously turned to food imports to address the recurrent deficits in food commodities. However, Kenya utilizes measures within the

Common Market for Eastern and Southern Africa (COMESA) and the East African Community (EAC) trade agreements to intentionally limit its food imports. Further, the country has banned the import of genetically modified food products which has had negative implications for food items such as corn, snack foods, and dairy products throughout years (Kenya Agribusiness, 2021).

Similar to the agricultural sector, Kenya's fisheries have historically underperformed, only accounting for about 0.5% of the national GDP. Environmental instability, overfishing, and invasive species are the primary threats to the fishery sector. However, the government has recognized the opportunity for improvement, citing both the nutritional benefits of increased fish intake and the potential to partially reduce food insecurity by bolstering the sector (Frey, 2021). Approximately 12% of Kenya's GDP comes from the livestock sector, however, this area too has faced recent declines in output due to diminishing water and forage resources in pastoral regions (FEWS NET, 2021).

The poor state of Kenya's food systems and the need to address it is made apparent by the levels of hunger and malnutrition that exist in the country. Annually, food insecurity and malnutrition affect roughly 35% of the population (Bradbury, 2021). Between 2018 and 2020, on average, undernourishment affected approximately 24.8% of Kenyans, 68.5% experienced moderate or severe food insecurity, and in 2017, 79.1% of the population could not afford a healthy diet (defined as the lowest cost set of foods available that would meet dietary requitement guidelines from governments and public health agencies) (The State of Food Security and Nutrition in the World (SOFI), 2020 & 2021). Most recently in the 2021 Global Hunger Index, Kenya ranked 87 out of 116 countries represented in the data. In the same index, the country was assigned a hunger score of 23 indicating the level of existing hunger was serious. Over 25% of children

younger than five years old are stunted, this translates to around two million children. Stunting is the impairment in growth that children experience as result of poor nutrition. Left unaddressed, stunting results in irreparable mental and physical impairment. Further, malnourished children are more vulnerable to severe disease such as diarrhea, acute respiratory infections, and malaria; illnesses that all pose a high fatality risk (UNICEF Kenya, 2021; World Health Organization, 2020). Many Kenyan children also suffer from being underweight, four percent of whom are chronically emaciated, or wasted. The distribution of stunting and wasting varies by region in Kenya with some counties such as Kitui and West Pikot having stunting levels as high as 46%. Levels of wasting tend to be higher in arid and semi-arid regions where the most intense living conditions exist due to underdevelopment and susceptibility to environmental shocks (UNICEF Kenya, 2021; World Food Program Kenya, 2021).

Per the Global Alliance for Improved Nutrition, obesity is another nutritional concern in Kenya where the prevalence of adults (over age 18) living with obesity is approximately 17% (Global Nutrition Report, 2021)**.** This overweight prevalence is 4.1% for the country's under 5-year-old population. This information illustrates the double burden of malnutrition which is defined by the World Health Organization as the "coexistence of undernutrition alongside overweight and obesity, or diet-related noncommunicable diseases". Therefore, while the unavailability of food is directly linked to the state of chronic under-nutrition in Kenya, it is not the sole driver of malnutrition as a whole. Rather, for many people, the available foods tend to be of poor nutritional quality and diversity resulting in dietary intakes that are low in fiber and high in fats, salt, and sugar. The 2021 Global Nutrition Report found that though Kenya is on course to prevent an increase in the rate of obesity among children under 5 years old, it has not demonstrated any progress towards achieving targets for reducing adult obesity. This suggests

that the country will be among the many LMICs predicted by WHO to experience rising rates of obesity in the coming years. With current trends, the World Obesity Federation predicts that nearly 23% of the Kenyan population will suffer from obesity by 2025 (Lobstein & Brinsden, 2020). Similarly, limited progress has been made towards the targets for diet related non-communicable diseases (NCD). An estimated 39% of all deaths in Kenya are attributable to NCDs. Of the total NCD prevalence those most related to diet such as cardiovascular diseases and diabetes comprise 36% and 6% respectively (The Department of Non-Communicable Diseases - Kenya Ministry of Health, 2021). The most recent data shows that Kenya's Total Health Expenditure (THE) for NCDs for fiscal year 2017/18 was approximately 494 million USD, in 2016 a total health care cost of 138 million USD was attributable to obesity specifically in Kenya (The Department of Non-Communicable Diseases - Kenya Ministry of Health, 2021; Lobstein & Brinsden, 2020). This accounted for 11% of the country's Total Health Expenditure for that time frame. The Kenya Non-Communicable Diseases and Injuries Poverty Commission Report found that interventions needed to alleviate the impact of NCDs would require 17% of the country's THE. Such interventions would include outpatient and inpatient NCD services, rehabilitation services, and community-based prevention efforts. The economic impact of NCDs on Kenyan households has been measured as a 28.6% decrease in household income, sending many families into an inescapable cycle of poverty (NCD Strategic Planning).

Women and children have historically experienced higher rates of malnutrition due to gender inequalities in household food distribution. Amongst women of reproductive age, 4 out of 10 and 79.9% suffer from anemia and zinc deficiency respectively (World Food Program Kenya, 2021). Another gender-oriented nutrition aspect to examine is that of breastfeeding. Breastfeeding plays a critical role in preventing multiple forms of malnutrition including stunting, wasting, and

micronutrient deficiencies. Based on research by WHO, one of the most successful child health strategies globally is that of exclusive breastfeeding (EBF) (meaning that an infant receives only breast milk) at least for the first six months of life. The 2017 Situation Analysis of Children and Women in Kenya shows that most children were breastfed but slightly less than half were introduced to complementary foods before reaching six months old. In fact, 13% of infants were given complementary foods between 2-3 months. Further, most of the complementary food options were inadequate in quality and quantity meaning children did not receive the levels of nutrients required to support proper growth.

India

Boasting one of the world's largest economy, India has historically been predominantly agrarian. It has emerged as one of the top producers of crops such as rice, wheat, sugar, and dairy globally and is a leading producer in the fish, poultry, and livestock sectors (International Trade Administration, 2021). 66% of the nation's population resides in rural areas where in agriculture is the backbone of the region. The largest proportion of the working population, nearly half, is employed in this sector and it accounts for 16.5% of the annual gross domestic product. Much like Kenya however, chronic food and nutrition insecurity persists. Approximately half of India's land is arable yet for numerous years, only 43% has been cultivated (Gulati, et al., 2021). Farm production is heavily monsoon dependent and the resulting crop yields are typically lower than global averages for reasons such as inefficient food distribution strategies, insufficient farmer education and training, and heavy government regulation (Gulati, et al., 2021). Even so, India produces adequate amounts of food to feed its people but a continued lack of access to the food gives rise to high levels of hunger and malnutrition in the country. Socioeconomic status is a leading determinant of access to food. For example, upwards of 30% of rural households do not

own land, unemployment rates have risen dramatically, and a large sector of the population rely on income from the informal economy which is too low and unstable. Additionally, low literacy and formal education levels hinder social mobility and discrimination based on caste, religion and gender is prevalent (McKay et al., 2020).

In response to changing demands introduced by an increasingly urbanized population, India's agricultural sector is moving away from traditional farming practices towards horticulture and livestock. The demand for imported commodities has similarly shifted due to the millennial generation, growth in the country's middle class, affluent professionals, and e-commerce retailers (International Trade Administration, 2021). Tree nuts and fresh fruits are among the highest imported agricultural products and are sold primarily in open markets and at roadside stands. Small neighborhood markets (kirana stores) and gourmet grocery stores offer imported packaged and consumer ready foods. Despite the steady growth observed in imports, obstacles are still present in the form of high tariffs, import restrictions, and competition for domestic industries (International Trade Administration, 2021).

Though India is positioned as one of the top producing economies, it is home to the largest number of undernourished people, approximately 195 million, which accounts for about 15% of the world's total undernourished population and 25% of global hunger (United Nations in India: Nutrition and Food Security, 2021). The most recently available estimates show a moderate to severe food insecurity prevalence of about 31.6% between 2017 to 2019 (Drishti Indian Administrative Services, 2021). Roughly 38% children under five are stunted, and 20% suffer from wasting. The country ranked 101 out of 116 on the 2021 Global Hunger Index and had a hunger score of 27.5, slightly higher than that of Kenya. In 2017, 71.5% of the population could not afford a healthy diet as the median household income during this period was roughly

equivalent to the cost of a healthy diet, (Ritchie, 2021). Indian women and girls are disproportionality affected by food and nutrition insecurities, the current level of anemia among those of reproductive age is over 50%. Their experience with malnutrition is heavily tied to gender inequalities in land ownership, employment, and low recognition of agricultural economic contributions (McKay et al., 2020).

	Prevalence of Undernourishment in Total Population [1] (in %)			Percent of Population that Cannot Afford a Healthy Diet[2]		
	2017	**2018**	**2019**	**2017**	**2018**	**2019**
Kenya	24.6	24.4	24.8	79.1	nr[3]	nr
India	13.8	14	15.3	71.5	nr	nr

1. Data obtained from the World Bank available at https://data.worldbank.org/indicator/SN.ITK.DEFC.ZS?locations=KE-IN
2. Data obtained from Our World in Data available at https://ourworldindata.org/diet-affordability#:~:text=The%20researchers%20found%20that%20the,cannot%20afford%20a%20healthy%20diet.
3. Not reported

The double burden of malnutrition also exists in India as the proportion of overweight and/or obese people is almost equal that of the underweight proportion. In both rural and urban regions, there is less than adequate intake of fruits and vegetables. Simultaneously, dietary intake of foods high in sugar, sodium, and unhealthy fats is increasing (Global Alliance for Improved Nutrition, 2021). The observed trend in overweight and obesity threatens non-communicable disease and various life-long complications associated with them. Issues with breastfeeding also contribute to India's nutrition challenges. Namely, more than half of the country's infants are introduced to complementary food later than the recommended. Research has found that while exclusive breastfeeding in best for the first six months, breast milk alone is insufficient to meet a child's complete nutritional needs after that time. There are additional challenges with offering

complementary foods of the correct nutritional makeup once exclusive breastfeeding ends (UNICEF India, 2021)

Impact of COVID-19 on Food and nutrition in Kenya and India

Kenya

Kenya's food infrastructure has been significantly re-shaped by the COVID-19 pandemic and the government's response to it. Kenyans have long dealt with food and nutrition challenges as detailed above, however many of these challenges have been exacerbated in the last two years since the emergence of the SARS-CoV-2 virus. The onset of the outbreak coincided with Kenya's planting season; a critical time point in the country's agricultural cycle. Kenya was also experiencing a severe infestation of desert locusts at the same time. These pests proved significantly detrimental to animal health, the environment, and crop yields. In a 2020 survey administered to smallholder farmers by the European Commission, about half of those who experienced locusts invasions report crop losses that were high to very high. Flooding from copious rainfall was yet another obstacle Kenya faced during this period. Floods hindered agricultural productivity and delayed land preparation as croplands were swamped. In this way, the pandemic came at an especially poor time for Kenya.

Government imposed containment measures such as overnight curfews, travel restrictions, and stay at home orders have had the greatest impacts on Kenya's food system value chain. Road freights are vital for the transport of essential commodities in the country, however, traders and transporters faced novel challenges with accessing farms and markets due to the mandated movement restrictions. Transport blockages often occurred at international borders due to

lengthy COVID-19 testing regimes. Major delays resulted and led to substantial perishable food loss.

The pandemic also caused international and domestic trade restrictions. The effects were heavily experienced in the agricultural sectors as agro-dealers were initially unable to access critical farming materials such as tools, seeds, and fertilizers. Ultimately, the government was able to meet the supply demand for fertilizer after streamlining agriculture as an essential service, but issues persisted. Transporters reported a preference to stay at home due to fear of contracting the virus as well as a fear of overzealous police who had taken to brutalizing people as a means of upholding the lockdown regime (European Commission, 2021). Additionally, some dealers were unable to supply the materials to farmers due to disordered business hours caused by the stay-at-home orders and nightly curfews. Farmers therefore had input shortages that delayed or completely prevented planting. They reported a 4.1% increase in the pandemic's negative impacts on their main source of income from August to November 2020. They faced added struggles in terms of a lack of capital and high costs of agricultural materials. This chain of pandemic induced agricultural disruption has negatively impacted millions of people whose livelihoods depend on the food system whether they directly consumed crop yields, relied on the food sale for income, or were employed in another part of the food supply chain. Government imposed movement restrictions and reduced business operating hours have also caused heightened unemployment and have impeded alternative income earning opportunities. This, in conjunction with low seasonal crop output have led to drastic declines in household food stores leaving people increasingly depended on food markets. Food prices have consequently increased beyond the purchasing capacity for a large proportion of the population (European Commission, 2021). In February 2021, Financial Sector Deepening (FSD) Kenya reported that about 63% of

the country's households have skipped meals, yet 65% noted that food was available for purchase at local markets. This indicated that for many people, an absence of food was not the problem but rather their inability to access it due to a lack of money (The Global Alliance for Improved Nutrition, 2021).

Many households have been forced to modify the quantity and quality of their food consumption during the pandemic. In general, households have reduced the diversity and volume of their food intake, consumption of grains and meats has been especially reduced. A lack of money to buy these and other types of food, inability to get to the markets, and fear of going out in public to shop were all cited as leading reasons for changes in household diets. The food situation has especially deteriorated in urban areas where about 1 million people are estimated to now be food insecure due to the socio-economic impacts of the pandemic (Food and Agriculture Organization of the United Nations, 2020). In a surveyed carried out by the Global Alliance for Improved nutrition, 98% of market vendor respondents in Machakos county and 94% in Kiambu County reported that the pandemic had an immediate impact on their businesses. More than 90% of all surveyed vendors noted a decrease in customer volume and over 80% cited a decrease in sales.

An additional sector experiencing high levels of pandemic induced acute food insecurity is the informal settlement community in urban areas. Reduced opportunities for labor and mandated movement restrictions are also the primary drivers in this arena (Global Alliance for Improved Nutrition, 2021). With the pandemic ongoing and the emergence of novel variants every few months, poor urban households in places like Nairobi and Mombasa will likely continue to face a food and nutrition crisis.

India

The COVID-19 pandemic has undoubtedly worsened that state of hunger and nutrition in India. The initial 75-day government instituted lockdown in March 2020 resulted in an extreme economic crisis that the country has yet to recover from. Roughly 100 million people became unemployed in that time, and even when the country was most re-opened by the end of the year, labor and household income sectors had only slightly recovered. The seasonally adjusted pe-capita incomes for October 2020 were 16% less than those recorded in February prior to the lockdown (Lahoti, 2021). Most of the available data that give attention to the livelihood crisis in India comes from household surveys carried out by independent research institutions and civil society organizations because the government has undertaken little to no official assessment of the situation thus far (Dreze and Somanchi, 2021). The most recently published 2021 edition of the State of Food Security and Nutrition in the World (SOFI) report presented data showing that approximately 97 million more people have become moderate to severely food insecure since the start of the COVID-19 pandemic.

The pandemic's impact on the state of food and nutrition on India's farmers and households have some similarities to Kenya. Namely, travel restrictions have severely limited agricultural inputs and have prevented people from reaching markets to sell commodities. Outlets, street food vendors, restaurants and supermarkets were all closed during the 75-day lockdown. This resulted in drastic income losses for many and robbed many others of their usual food supplier. Food prices increased among the few suppliers such as open-air markets and small food shops that were allowed to remain open (Béné et al., 2021; FAO et al., 2021). Primary food producers have also faced numerous pandemic related challenges. Key ones include disruptions in the input supply chain (seeds, fertilizer, machinery, etc.), declines in business revenue, and reduction in labor due to movement restrictions and workers' fear of exposure to the virus (Béné et al., 202).

Results from a telephone survey of 448 Indian farmers across four states show that most of them experienced negative impacts on crop production, sales, and income due to the pandemic. More than 80% reported reduction in sales, of that amount, more than 20% noted "devastating" decline, in other words, selling almost nothing. There was a general income decline for 90% of respondents but 60% experienced an income drop of more than a half. Most farm households surveyed had to modify the quantity and quality of their diets. Though many reported being able to protect some staple foods, consumption of fruits and non-dairy animal sources were reduced.

Informal workers, primarily migrants, in India have experienced particularly grave food and nutrition insecurity due COVID-19. When the lockdown was enacted in March 2020, millions immediately loss their livelihoods. Many families went hungry during this time. One survey reported that 35% of almost 10,000 migrant workers were consuming less than two meals daily in May 2020. Another survey of migrant workers revealed that upwards of 60% could not ensure two solid meals daily for their household in June 2020. Many respondents also admitted to consuming less nutritious foods during and after the lockdown as compared to before (Dreze and Somanchi, 2021).

Workforce Nutrition

Though the COVID-19 pandemic is ongoing, many countries including Kenya and India have considerably eased containment measures that were once in place. While safety strategies such as mask wearing, vaccinations, and hand hygiene are still heavily encouraged, people's movements are much less restricted now compared to the earlier months of the pandemic. Governments are also now focused on efforts to recover their economies from the overwhelming shocks of the pandemic by revitalizing the job market and tackling widespread unemployment. Workforce nutrition (WFN) is a noteworthy tool that can be utilized among employers to address food and

nutrition issues in the pandemic recovery effort. The Global Alliance for Improved Nutrition characterizes workforce nutrition as “a broad set of actions that employers can take to improve nutrition and health for their workers”. This characterization encompasses the full spectrum of workers including direct workers such as those in factories and offices and indirect workers such as small holder farmers in supply chains. WFN programs are typically a set of interventions that aim to improve employees’ access to safe and nutritious foods, influence positive behavior change around food consumption, and improve overall health and wellbeing (The Workforce Nutrition Alliance, 2020). WFN may often be roughly divided into four domains: healthy food at work, nutrition education, nutrition-based health checks, and breastfeeding support. Healthy food at work focuses on increasing workers’ access to nutritious foods in the workplace. Nutrition education centers on lifestyle behavioral changes by improving employees’ knowledge about better health habits. Nutrition health checks occur periodically with a health professional to assess employees’ nutritional health and offer necessary support. Breastfeeding support enable working caretakers to provide appropriate nutrition to their children (namely exclusive breastfeeding for first 6 months) and support overall maternal health (The Workforce Nutrition Alliance, 2020).

Workforce nutrition is often encompassed within the overarching concept of workplace wellness. While various researchers posit different time periods and individuals with the first introductions of wellness in the workplace, this research will concentrate on origins dating back to 1950s in the U.S. At this time, companies began introducing Employee Assistance Programs (EAPs), health-oriented interventions that primarily addressed alcoholism and mental health issues (Owens, 2006). In the 70s, the financial responsibility for healthcare was shifted from the government to employers. The resulting investment in worksite wellness was therefore emerged from

employers' interests in cost containment. Employers realized the cost benefits of having healthy employees through channels such as healthcare benefits and preventative physical health programs (Rucker, 2016). Developments in the workplace wellness movement during this time were linked to those of the occupational safety and health movement which focused on the prevention and reduction of workplace accidence and employee illness (Rucker, 2016). Another major emergence in the 70s was the groundbreaking Johnson & Johnson *Live for Life* program which has become the model for corporate workplace wellness programs (Sawyer, 2021). The program centered around employee fitness, stress management, and nutrition. A physical assessment was conducted for employees which allowed companies to offer wellness support to those who were found to have high BMIs, poor stress management techniques, and poor nutrition habits (Peerfit, 2021). Data from a study about the effectiveness of the Live for Life Program revealed significant reductions in participating employees' stress levels, smoking, and weight. Additionally, there were significant improvements in their exercise and fitness levels. Over a 5-year period, hospital costs doubled for employees in the Live for Life program and quadrupled for those who were not a part of it (Blair et al., 1986; Bly, 1986; Bruno et al., 1983).

More specific origins of workforce nutrition can be traced back to the 1930s when scholarly publications began emerging about the topic. This then culminated with the publication of the book *Nutrition in Industry* in 1946 by the International Labour Organization (ILO), a specialized agency of the United Nations focused on promoting and building international consensus on global labor rights (Wanjek, 2005). The book described efforts to feed workers in large enterprises in Canada, Great Britain, and the U.S. A decade later in 1952 the Welfare Facilities Recommendation (No. 102) was introduced and adopted by ILO and its various committees. The recommendation included guidelines for establishing canteens, cafeterias, and other food

facilities in work settings. ILO adheres the principle that occupational health should aim to establish and uphold the highest degree of physical, mental, and social wellbeing of workers. It is in through this framework that the organization includes nutrition as an essential element for a healthy workplace (Wanjek, 2005).

- Canteens providing appropriate meals should be set up and operated in or near undertakings where this is desirable, having regard to the number of workers employed by the undertaking, the demand for and prospective use of the facilities, the non-availability of other appropriate facilities for obtaining meals and any other relevant conditions and circumstances.
- In undertakings where it is not practicable to set up canteens providing appropriate meals, and in other undertakings where such canteens already exist, buffets or trolleys should be provided, where necessary and practicable, for the sale to the workers of packed meals or snacks and tea, coffee, milk, and other beverages.
- In undertakings where it is not practicable to set up canteens providing appropriate meals, and, where necessary, in other undertakings where such canteens already exist, messroom facilities should be provided, where practicable and appropriate, for individual workers to prepare or heat and take meals provided by themselves.

- Excerpts from Welfare Facilities Recommendation, 1956

Both the overall workplace wellness movement and the more specific workplace nutrition movement have evolved in the years since their introductions. The general workplace wellness movement has shifted its focus to incorporate broader employee wellbeing rather than just the singular focus of employee health. Though there may not be a consensus on the exact definition of wellbeing, most people have acknowledged it as a multi-dimensional concept. That is to say that employee health results from a combination of factors and not solely from one's individual lifestyle. With this focus, many employers offering workplace wellness programs are

increasingly realizing the need for integration across multiple domains of employee benefits (McPeck, 2019). Regarding workforce nutrition specifically, many developed/High Income Countries (HIC) have witnessed a most notable shift in focus. Where the initial concern was to ensure that workers simply had enough food, much of the attention is now being placed on the nutritional value and safety of the food provided. This shift can be at least partially attributed to the ongoing rise in obesity and subsequent diet related non-communicable diseases over the last several decades (Wanjek, 2005).

Workforce nutrition programs can be designed to operate within the already existing structures of the workplace and have potential to address multiple facets of malnutrition including underweight, anemia, obesity, and diet related non-communicable diseases (Global Alliance for Improved Nutrition, 2019). Programs may include the provision of healthy food in the workplace for free or at a subsidized rate and/or integrating nutrition education to promote healthier eating among employees at and outside of work. The workplace is an ideal setting for targeting food and nutrition concerns given that one third of the global population spends approximately 58% of their time at work during adulthood (Global Alliance for Improved Nutrition, 2019). Existing research provides evidence in support of WFN as an enabler to positive nutrition and health behaviors within the labor force.

Studies examining the benefits of past WFN programs have shown that in terms of addressing undernutrition, improvements occurred in worker's diets and overall health (Evidence Brief: Healthy Food at Work, 2019). Among the various programs evaluated, increased healthy food consumption was one of the most frequently reported outcomes. This is a noteworthy outcome given that the systematic analyses for the Global Burden of Disease Study in 2017 highlighted that non-optimal intake of fruits, sodium, and whole grains accounted for over 50% of deaths and

66% of disability-adjusted life years attributable to diet (Afshin et al., 2019; Evidence Brief: Healthy Food at Work, 2019). Additionally, improvements in weight gain occurred in programs focused on workers with micro-nutrient deficiencies. Another WFN program implemented by GAIN for female garment workers in Bangladesh that provided fortified healthy meals and folic acid supplements saw a 12-32% reduction in anemia among workers (Hossain et al., 2019).

In terms of improving food security, the success of school feeding programs can act as evidence in support of workforce nutrition programs. Given their similar mechanism of effect (targeting improved nutrition in a group setting where extensive time is spent), school feeding programs are in many ways analogous to WFN programs. In the U.S. there are various school feeding programs but most notable are the federally funded School Breakfast Program and National School Lunch Program (NSLP) which operate in public and nonprofit private schools and various childcare institutions. These program offers nutritional, low cost or free breakfast and lunches to students each school day. In 2019 alone, over 2.4 and 4.8 billion breakfast and lunches were served respectively through the programs (USDA: Food and Nutrition Services, 2022). A study published by researchers at Iowa State University in the Journal of Econometrics looked at the impact of the school lunch program on children's nutritional health. Analysis was performed on data from approximately 2,700 children enrolled in the NSLP taken from the CDC's National Health and Nutrition Examination Survey. Researchers found a 3.8% decrease in the prevalence of food insecurity among the sample (Gundersen et al, 2012). Another study conducted by researchers at the University of Chicago and published in the Social Service Review Journal examined the association between the School Breakfast Program and breakfast-skipping among elementary students. Conducted on students spanning 67 elementary schools in 26 Wisconsin counties, findings showed decreased risk of overall food insecurity and break-fast skipping

among children attending schools that offered the Breakfast program compared to similar children at schools without it (Bartfeld and Ryu, 2011). In many LMICs, the World Food Programme (WFP) has undertaken various school feeding programs for decades. In 2020, nutritious meals were distributed to15 million schoolchildren globally via WFP school feeding interventions. A case study of a WFP school feeding program in Lebanon revealed that the program improved diet diversity and decreased food security and short-term hunger among both Lebanese and Syrian Children (WFP, 2020). Additionally, in 2020 when the pandemic first began many schools worldwide were forced to close. This resulted in significant disruptions to the regularly feeding regime of millions of children who depended on the food they received at school for adequate hunger and nutrition needs. There was a noticeable increase in food insecurity among many of these children and their families who could not afford to replace the meals they would have otherwise received at school (Ahmed, 2020).

Regarding overnutrition/ diet related non-communicable diseases, research has shown many workplace wellness/nutrition programs to be effective in reducing risk factors. A comprehensive systematic review published in 2009 looked at the effectiveness of worksite nutrition programs to facilitate healthy employee weight. The review found that 47 programs reported positive nutrition and health outcomes using weight, BMI, and body fat percentage to assess program effectiveness (Anderson et al., 2009). Both males and females across a range of worksite demonstrated favorable changes in weight, BMI, and body fat percentage. Similarly, a 2017 Narrative Review study examined 14 peer reviewed documents on workplace wellness interventions for preventing type 2 diabetes Mellitus (T2DM). The evaluated wellness programs were offered by employers in the U.S., Finland, and Germany. Most programs had translated the CDC's Diabetes Prevention Program (DPP) curriculum into the work setting and others utilized

alternative approached aimed to T2DM prevention. The review found that all programs demonstrated effectiveness in terms of weight loss, the main determinant of T2DM prevention (Hafez et al., 2017). Additional data supporting the effectiveness of WFN programs in tackling overweight/ non-communicable disease comes from a study examining dietary intervention on serum lipids in factory workers. Over a 2-year period, 155 workers participated in the screening and prevention program. The foods they were served in the factory canteen were made healthier by reducing the total calories and increasing fiber and unsaturated fats. There was a mean serum cholesterol reduction of 8.28% among the group after two years (Thorsteinsson et al., 1994).

Workforce nutrition initiatives may also be able to mitigate gender inequalities present in food and nutrition insecurity. In addition to reasons examined earlier in this paper, female workers are often more nutritionally worse off than male workers due to distinctive nutritional needs during reproductive years. Attending to and teaching about such needs in the workplace may help to lessen the disproportionate burden women often bear, this is especially true for female dominated sectors like tea and garment production (Global Alliance for Improved Nutrition, 2019). WFN may similarly make strides in breastfeeding practices by designing programs that enable working caretakers to still offer proper nutrition to their infants. Similarly, nutrition education interventions may be able to teach parents about appropriate breast and complementary feeding practices. In this way, WFN may have the potential to deliver long lasting indirect nutritional benefits that extend beyond the immediate workforce, however, there is a current lack of existing research in terms of mitigating nutritional gender inequities.

In Kenya, many organizations including Safaricom and Kenyatta University have already implemented workplace wellness programs and many more are in the process of doing so. An increasing number of employers are becoming more conscious about the health of their

workforce realizing that improved employee health and well-being is likely to translate to improved work performance outcomes. To date, workplace wellness programs in Kenya have heavily concentrated on prevention and control of HIV/AIDS and related illnesses (Ngeno & Muathe, 2014). This is illustrated by the Clustered Health Enterprise Partnership (CHEP) Networks designed and implemented by the Federation of Kenya Employers (FKE). The CHEP Networks are groups of companies that collaborate to enhance action on HIV, health, and wellness in the workplace. As a part of this network, various Kenyan companies have mobilized to integrate HIV centered wellness programs into their frameworks. Services such as HIV testing, treatment, and counseling have been made available to over 150, 000 employees through this channel (The Federation of Kenya Employers, 2022). In recent years, the scope of workplace wellness programs has begun evolving to encompass much more than HIV/AIDs related issues. Many employers now realize the need for things such as health education, breastfeeding support, and stress management programs. Some local companies for example finance employees' basic clinical checkups that examine blood pressure, weight, and cholesterol levels (Ngeno & Muathe, 2014).

Workplace wellness in India came into practice during the late 19th century under the concept of "employee welfare and benefits". This terminology was broad in scope but essentially referred to employees' intellectual and social well-being beyond their wages. Most employee welfare elements implemented during this time were statutory, meaning they met only the mandatory minimum requirements employers needed to adhere to per labor policies (Kunte, 2016). Some employers however went beyond providing the statutory requirements to include additional benefits. Tata Steel was one such organization, it was a pioneer in introducing employee health checks, employee education programs, and providing child education for employees (Kunte,

2016). As time progressed, other companies such as Cummins and Bajaj Auto introduced wellness programs that incorporated preventive healthcare practices for workers. Stress management workshops and health risk assessments are several of the elements generally built into such wellness programs. Currently, a multitude of employers in India offer workplace wellness programs encompassing a range of offerings from tackling alcohol and smoking dependency to chronic disease management (PRACTO, 2015).

With particular regard to nutrition, one notable approach is taking place within the tea industry both in Kenya and India. The Healthy Diets for Tea Communities, launched in 2021, is a coalition spearheaded by GAIN and the Ethical Tea Partnership. It currently operates in Kenya, India, and Malawi. Both Kenya and India are among the leading global tea producers. Unfortunately, workers in the tea industry have historically had poor nutrition. This has long resulted in high prevalence of anemia, hypertension, and overweight/obesity (GAIN: Weiligmann, 2021). One aspect of the program is to provide workers and their families with information about good nutrition via SMS messaging on their mobile devices. This information is also being disseminated via traditional routes such as educational posters and physical flyers and pamphlets. An additional component of the program is focused on providing affordable nutritious food directly to workers and their families. This is being done by utilizing local food kiosk vendors who purchase nutritious foods external to the tea farmer communities and bring them in to sell (GAIN: Weiligmann, 2021). The program also supports tea farmers to create and maintain kitchen gardens with nutritious staple foods including sweet potatoes, beans high in iron, and local fruits high in vitamins A & C. Mass media communication such as radio talk shows and advertisements around nutritious food consumption have also been implemented as part of the initiative (GAIN: Weiligmann, 2021).

Though there is a clear case for its role, workforce nutrition is not currently a prominent component of the nutrition agenda globally. Only a small proportion of the global labor force can currently access healthy food at work and many supply chain employers who offer food to meet regulatory requirements do not ensure it is appropriately nutritious (Global Alliance for Improved Nutrition, 2019). What can be argued here is that workforce nutrition interventions are equally beneficial to needs of both employers and employees. Past programs have shown increased job satisfaction among workers coupled with lower rates of missed workdays due to illnesses, and higher productivity levels. Approximately 66% of companies globally with successful WFN programs believe that they outperform their competitors (Global Alliance for Improved Nutrition, 2019). On a grander scale, a healthy workforce has been shown to positively affect the United Nation's Sustainable Development Goals 2, 3, and 8. Respectively, the goals target zero hunger, good health and wellbeing, and decent work and economic growth.

The evidence for WFN is compelling, but nonetheless, there are challenges associated with it. Research and knowledge gaps exist primarily in distinguishing best practices for developing and implementing the programs. Additionally, past programs have highlighted difficulties with expansion across a company's entire workforce, clearly defining the role of the public sector in WFN and making a case for sustained investments and scaling up of programs within companies. Local policy pertaining to food in the workplace and maternity leave can support WFN initiatives but may need to be updated to be more nutrition oriented in order to best do so (Global Alliance for Improved Nutrition, 2019). Successful design and delivery of workforce nutrition programs in LMICs such as Kenya and India will not occur without hiccups. However, there is convincing evidence that such programs can alleviate food and nutrition insecurities and given

the devastating impacts of the COVID-19 pandemic, this is an approach that is needed now more than ever.

Chapter 3: Methodology

In response to the COVID-19 pandemic, GAIN developed the Keeping Food Markets Working (KFMW) emergency grant program. This grant was intended to rapidly support the food and nutrition security of 200,000 food system workers in small and medium enterprises (SMEs) in GAIN's targeted LMICs including Kenya, India, Bangladesh, and Pakistan. The KMFW program aimed to mitigate the risk of COVID-19 induced disruptions to global food systems by awarding grants to SMEs in the food sector. The grants were utilized by the selected companies to provide food and nutrition support to thousands of frontline food systems workers. The data collected and analyzed to formulate this thesis comes from key informant interviews with staff from the GAIN country offices in Kenya and India as well as with leaders in the KMFW grant recipient companies. Additional data were collected via beneficiary surveys administered to the front-line employees of the grant recipient companies. The following section offers a detailed overview of the methodology approach including a description of research partners, company selection process, research tools, and the quantitative and qualitative techniques used.

Overview of Approach

The conceptual framework used to guide this project's evaluation activities was the Consolidated Framework for Implementation Research which was applied to carry out a mixed-methods, multiple case studies approach. This framework considers various levels of influence and the affect that interaction between these levels have on program implementation, sustainability, and effectiveness. Levels of influence include the broader socio-cultural and political context, the internal context of the organization, characteristics of the intervention, the implementation process and the beliefs, attitudes, and social norms of the beneficiary population.

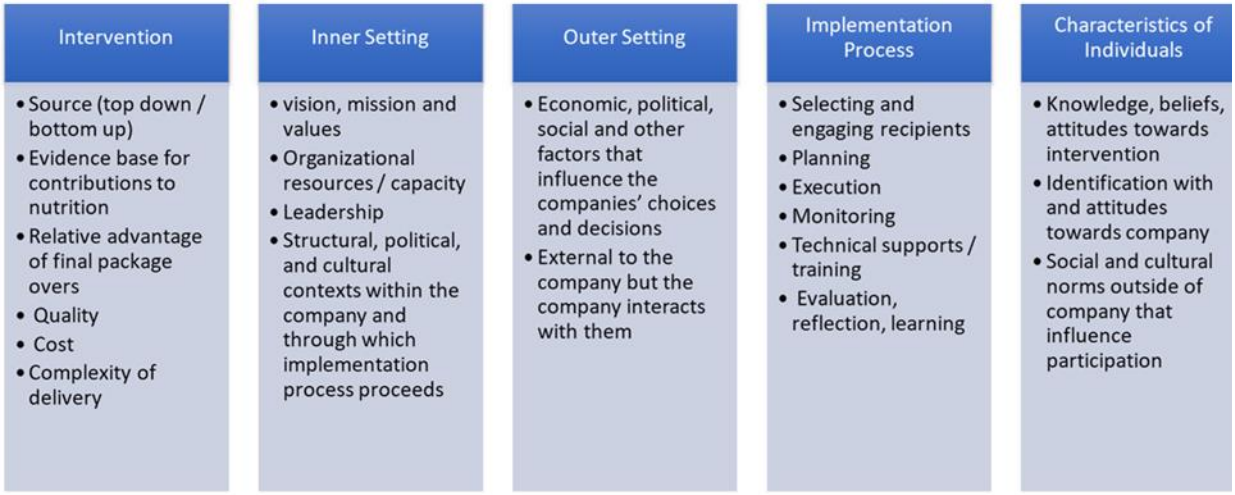

Figure 1. Domains of Consolidated Framework for Implementation Research (CFIR) adapted to the KFMW emergency food security grants program from https://cfirguide.org/

KFMW Applications & Company selection

Of the companies that were awarded the KFMW grant by GAIN at the time of this study (n= 19), only a select number were chosen by the research team for this project (n= 16). Company selection for the evaluation was undertaken with the goal of capturing diversity in sector, geography, company size, and beneficiary population. In the grant application process, GAIN collected relevant information from each applicant company including their organizational structure, number of employees, grant implementation plan, targeted beneficiaries, and proposed budget. For both India and Kenya, all company applications (funded and unfunded) were reviewed, and the relevant information was abstracted into a country specific structured spreadsheet. This allowed for better comparison between the varying companies.

In Kenya, four funded companies were chosen for participation in the study after careful review of all funded applications and discussions with the GAIN Kenya team. These four included a corporate foundation working with tea farmers and pluckers (Kenya Company 1), a food production and value addition company (Kenya company 2), and two supermarkets (Kenya

Company 3 and Kenya Company 4). Similarly, company selection in India occurred after thorough review of all funded applications and discussions with the GAIN India team. Three organizations were selected; two food production and value addition organizations (India Company 1 and India Company 2) and a grassroots community centered organization committed to addressing food insecurity (India Company 3).

Research Partners

Data for this project were generated via semi-structured in-depth interviews and remote beneficiary telephone surveys. In Kenya, Emory conducted all qualitative interviewing but contracted the data collection company, 60 Decibels as an external research partner to carry out the remote beneficiary telephone surveys. As a technology enabled social impact company with experience in over 50 countries, 60 Decibels is very skilled in applying past insights to refine survey methods to a culturally appropriate context. A team of analysts and enumerators from the company worked with Emory to refine the survey data collection plans through remote/virtual meetings, translating the survey content into Swahili and Kalenjin languages, piloting surveys, conducting telephone surveys, and supervising database creation.

In India, two research partners were contracted to support the Emory team in conducting beneficiary telephone surveys as well as in depth company leadership interviews. Dr. Pravesh Dwivedi, an independent consultant, and his team supported data collection in Uttar Pradesh (India Company 1 location) and Assam (India Company 2 location). The second research partner, Fieldscope, supported data collection for India Company 3 in Andhra Pradesh, Tamil Nadu, Telangana, Jharkhand, and Rajasthan. Both teams managed data collection from key informant in-depth interviews with company staff.

Qualitative Research: Key Informant Interviews

Research Tools

Semi-structured in-depth interview guides were developed for interviews with GAIN country office leadership and company leadership. Guides were developed collaboratively by the Emory University team members with inputs from in country research partners. Each guide was then refined to fit the appropriate country context, organization structure, type of interview participant, and grant implementation model. Guide development was an iterative process undertaken in consultation with nutrition experts at Emory University. Interviews with GAIN country office leadership aimed to gather information about multiple aspects of the grant process including company applications, criteria utilized to select grantees and best practices and challenges in grant implementation across companies. The interviews were also intended to help connect the Emory research team with leadership from the organizations chosen for inclusion in the KFMW evaluation. Key informant interviews with company leadership were similarly geared towards understanding the entire spectrum of the grant implementation process from the companies' point of view. Some of the key topics included in the company leadership interview guide focused on the motivation for applying for the grant, employee beneficiary selection criteria, nutrition considerations for program implementation, and procurement and distribution processes.

Data Collection

In Kenya, in depth interviews were carried out with the GAIN Kenya country office team to understand the details of the grant application and award process, grant implementation by the companies, and to connect with company leadership. Four 1-hour long interviews were conducted with the GAIN Kenya Monitoring and Evaluation Associate and the Project Manager

individually. The GAIN Kenya team facilitated email introductions between the Emory research team and leadership from the four grant recipient companies chosen for this project. GAIN Kenya also familiarized the Emory teams with the attributes of the company leaders including English fluency levels and their technological capacity to partake in remote interviews. This information was utilized to purposively select company leaders responsible for grant implementation to participate in interviews.

One point of contact was identified and recruited for interviewing from each of the four companies. For all but one company (Kenya Company 1), this point person was the employee most responsible for coordinating the KFMW project. The point of contact for Company 1 however was the head of the organization. For Companies 2-4, only one interview was carried out with the respective project coordinators. There were 2 interviews for Company 1, the first occurred with the head of the organization alongside the project coordinators to better provide an overview of the company's grant implementation process. The second interview consisted solely of the company's two project coordinators and focused on the specifics of grant implementation. In total, 5 interviews with 6 participants were conducted. The Emory team carried out all interviews using the interview guide, in English, and remotely via the Zoom video conferencing platform. Where appropriate, the interviews were recorded and later transcribed using and online transcription platform, Otter AI. The team chose not to record interviews in cases where rapport building with the participant was important. In such cases two graduate research assistants to took detailed notes that were ultimately used in place of transcripts.

In India, a list of core questions was emailed to the GAIN India country office lead to understand their specific role in the KFMW project as well as the country office's role in the grant process. Additional information gleaned by the core questions included the grant application and award

processes. A follow up interview was then conducted with this key informant by the Emory team, to further understand the criteria used in selecting grantee companies, the process of grant administration, and the India country office's perceptions of best practices and challenges in grant implementation.

In depth interviews were conducted with several employees of each of the three grantees in India. These interviews were carried out by research partners fluent in the local language. The company employee most responsible in coordinating the KFMW project, was interviewed first. Via snowball sampling, this individual then referred the research team to additional employees involved in ground level grant implementation activities for the various locations the companies were located in. All interviews for India were conducted remotely utilizing the Zoom video conferencing platform, they were recorded and later transcribed via Otter AI.

Beneficiary Surveys

Research Tools

Among all four countries included in the project, a structured survey was developed to explore beneficiaries experiences with the program and identify potential program impacts. The survey was designed to be administered over the phone due to COVID related lockdowns in each country and the resulting movement and in person contact restrictions placed on research partners. The survey was developed by the Emory research team and then reviewed by research partners in each country. Topics queried included: beneficiary demographics and employment information, food distribution support prior to and during the pandemic, and household and workplace impacts of the KFMW grant. Edits were carried out iteratively by the Emory team based on feedback from research partners. Each survey was customized to best fit the appropriate country context for which it was intended. In Kenya for instance, demographic related questions

(age, occupation, etc.) were shifted to the end of the survey as research partners found that this arrangement made participants more comfortable and amenable to responding.

Sampling & Data collection

Three of the four Kenyan companies included in the project were willing to provide a list of phone numbers for their beneficiaries (the fourth company was unresponsive to the research team's request to do so). 60 Decibels worked with the companies to obtain the list of beneficiaries and their contact information to take part in the survey. A pilot survey questionnaire was administered to 5 participants from each of the three companies and one question was restructured based on the pilot results. It was also found that some individuals listed had only picked up the grant packages for family members and were therefore not direct beneficiaries and would therefore be unable to sufficiently respond to the survey. Once these issues were resolved, 60 Decibels administered the survey to the beneficiaries for whom contact information was provided. They then provided a cleaned, raw data set upon completion of survey administration. There were several qualitative questions included in the survey, the 60 Decibel team coded the beneficiary responses to these prompts and included them in the final cleaned data set.

Lists of beneficiaries were provided for all three India companies and a population proportion to size approach was applied to decide the sample size for each company. Beneficiaries were randomly selected from the lists (with a margin for oversampling built in) once sample size decisions were finalized. Research partners responsible for administering the surveys then contacted sampled beneficiaries via telephone. A total of three phone call attempts were made to reach beneficiaries for the survey. A call log was maintained to document the number of attempts and reasons for call refusal to each beneficiary. The survey was administered using mobile

platforms –SurveyCTO was utilized for India Company 1 and India Company 2, and Kobo toolbox was utilized for India Company 3.

Data Analysis

Thematic Analysis

Thematic analysis, a flexible and widely used qualitative data analysis method detailed by Braun and Clark (2006), was conducted to identify patterns and themes across the data. An iterative process was used to develop the project codebook after our key informant interviews were completed and transcribed. We began by identifying deductive codes from the adapted CFIR framework and tools then inductive codes based on reading and memoing a subset of transcripts. Utilizing the MAXQDA analysis tool, the codebook was tested on the second set of transcripts and refined in terms of new codes, code definitions, inclusion, and exclusion criteria. A team-based approach to coding was applied by each country team with intensive training to achieve intercoder reliability greater than 85% across all four teams. Coded data were then reviewed via a three-pass approach applying a descriptive lens to the first pass, an analytical/comparative lens to the second pass and a third pass to identify patterns and code coalescence into themes. Further analysis of coded data was carried out to generate thick descriptions that contextualized relevant meanings and patterns within the data.

Research Ethics

Due to the evaluation nature of the work and the lack of generalizable findings, this research was deemed “not human subjects research” and exempt from review by Emory IRB. All interview and surveys, however, were implemented according to research ethics best practice and all participants provided verbal informed consent.

Chapter 4: Results

The following chapter outlines key findings from interviews and beneficiary surveys conducted with members of the GAIN country offices, company management, and beneficiaries in Kenya and India.

Company Perceived Impacts of COVID

Loss of Income and Livelihood

The KFMW grant was an emergency grant issued by GAIN in response to the COVID-19 pandemic induced disruptions to food systems worldwide. It was awarded to various food sector SMEs located in GAIN's low- and middle-income partner countries. During key informant interviews with GAIN country office staff, information was collected about the specific intentions of awarding the grant in the given country and company context(s). Interview participants shared that GAIN aimed to support the recipient companies to be able to support their most vulnerable workers via the provision of nutritious foods. It was GAIN's belief that offering this kind of support would help to alleviate some of the suffering among food industry workers caused by COVID. Apart from the direct nutritional benefit to the workers, another reason offered on GAIN's behalf for the intention of the grant was that it had the potential to motivate workers.

Similarly, interviews with company leadership gathered data about their organizations' reasons for pursuing the grant. These participants detailed the pervasive negative impacts of the pandemic on their organizations and employees citing that they created an urgent need for the support the KFMW grant offered. A theme that emerged in terms of COVID-19 impacts was that

of loss of income and livelihood among workers. In Kenya specifically, company leaders reported having to make adjustments in order to continue operating and meeting certain salary requirements. Some workers were placed on unpaid leave while others who continued to work had their shifts reduced. One company (Kenya Company 2) had to completely discontinue several of its production lines and though it was able to retain almost all employees, sifts had to be staggered in order to adhere to social distancing protocols given the company's large size. Doing so resulted in many employees working fewer days than in pre-COVID times, subsequently earning less income. For another company (Kenya Company 1), COVID-19 caused disruptions in the logistic supply chain which interrupted the regular tea export schedule. Therefore, tea farmers' incomes were significantly lessened making them an especially vulnerable group because of the approximately 650, 000 farmers associated with the organization, 92% owned less than 1 acre of land yet almost all were solely dependent on the income generated from their tea businesses. The supply chain disruptions also meant that farmers were unable to adequately pay the tea pluckers who worked for them which resulted in the pluckers not having the monetary means to meet their basic daily needs including food.

Another interview participant reported that due to economic hardship, employees within their company (Kenya Company 3) were skipping meals during the onset of the pandemic prior to the emergence of the KFMW grant. Participants also reiterated that given the typical dynamic of the Kenyan culture, most employees were a part of a larger family unit that depended on them for support. Therefore, the effects of COVID-19 were not isolated to the individual workers but rather, they permeated throughout families and households. For instance, an employee's reduced earnings translated into their entire household being at risk of not having their basic necessities met. Similarly, while an employee may have continued working during the pandemic, they too

were still heavily affected by another family member being placed on unpaid leave or earning less than usual. This further motivated companies to apply for the grant as they knew that it's indirect reach would be vast.

"So either they have been told to go unpaid leave, or they have the working hours reduced, and maybe the work shifts that are not as often as before. Or maybe they get their salaries have been reduced, so that the company can be able to retain all of them together." -GAIN Kenya Project Manager

"We were able to keep almost all of them. Okay, but at lower hours. If they are supposed to be 45 hours in a week, then they will do maybe only 25 or 30." – Kenya Company 2

In India, none of the companies chosen for evaluation in this project made mention of undergoing similar experiences in reducing their workforce or the number of hours for employees. However, one interview participant noted that people were working less in general compared to pre pandemic, another spoke of a tea estate in the vicinity that had to be closed for 3 weeks due to the pandemic. During this time, workers went without their daily wages which significantly hindered their ability to maintain adequate nutrition practices. Other participants shared that particularly vulnerable groups in the country such as female workers, migrant workers, and families living below the poverty line were heavily affected by COVID-19 in terms of loss of work and income. This was especially true given that the prices of basic commodities increased due to the pandemic while most workers' earnings either remained the same or decreased.

"Secondly, before covid people used to go for work. Now because of covid people are not going at their work…" – India Company 1

Food and Nutrition Security

In addition to loss of income and livelihood, participants also discussed the fragile state of food and nutrition security among workers which existed to some degree prior to the pandemic but

was worsened since its onset. In this same token, they frequently praised the grant's intentional focus on nutrition. A company leader from India Company 1 for example, drew a comparison between the grant provisions and the food rations offered by the Indian government noting that the latter lacked consideration for nutrition in the foods distributed. Participants from both countries spoke about the historical nutrition struggles present among families working in the tea estate sector. In Kenya, according to one company leader, research has shown that the nutritional status of farmers in the tea growing areas of the country is lacking. So many beneficiaries regarded it as a positive thing that the foods provided to workers with the grant funding were of adequate nutritional value. None of the India companies in this project were in the tea sector. However, India Company 2, which had direct association with families working in the tea industry shared that malnutrition and food insecurity were long standing issues in this population and were exacerbated by the pandemic. During the 3-week tea estate closure detailed earlier, nutrition levels among workers reached an alarming state as they reported consuming primarily rice and potatoes only during this period. Additional commendation was given to the foods distributed in the grant process for their ability to build immunity and protect beneficiaries against COVID-19 infections.

"…was also about supplementing their diets, because according to research, uh, they, in the tea growing areas, the nutrition, the nutritional status of our farmers is not really pleasing. So also, in the in the food that we were buying to distribute, we also catered for that in terms of which healthy foods that are available…" -Kenya Company 1

Participants in Kenya spoke further about the impacts of the pandemic on worker's nutritional state by sharing that many were forced to modify the types of foods they bought and consumed. A company leader reported that people stopped purchasing what was described as "luxury" food items. An example provided was that of having basic items such as porridge instead of bread and

jam for breakfast. This change was due largely to lack of affordability and the uncertainty about how the pandemic would pan out. Another instance of food modification described pertained to the tea sector workers. Due to the COVID-19 lockdowns and resulting travel restrictions many commodities that were not local to the tea growing districts were not being transported into the regions. As such, people were forced to consume only the foods that were locally accessible. For many people, such foods represented a shift from their usual diets. Due to the novel scarcity of the non-local foods, their prices were increased, further barring people from acquiring them.

Among the India respondents, several denied that the general makeup of the beneficiaries diets was significantly changed due to COVID. They did note that due to price inflation and income changes, people's purchasing power for food declined. However, it appeared that households made compromises elsewhere in their spending habits and were still able to continue purchasing their usual kinds of foods though in lesser quantities.

"Yeah, for food I don't think that there will be a change in diet and all that. Only affordability, so the people's income got affected badly. Because of that, maybe their purchasing power must have gone down. Otherwise, I don't see any issue from the normal diet what they take." – India Company 3

Workforce Nutrition

Workforce Nutrition Pre-Pandemic

In line with investigating the effects of the pandemic on companies' workforces, the research team also gathered data about social assistance programs, both internal and external, that may have been in place for workers prior to pandemic/ the introduction of the KFMW grant. This information was of particular interest as it could potentially help us better understand certain aspects of the organization's grant implementation process. The information also afforded us greater insight into worker's food and nutrition needs during and before COVID-19 and the ways

in which such needs had or had not been supported. From this line of inquiry, we found that several companies were undertaking workforce nutrition practices in various forms prior to the KFMW program.

Kenya Company 1 had previously partnered with GAIN to improve nutrition among tea estate workers through the Healthy Diets for Tea Communities program, a social behavior change initiative. The intent was for workers to modify their food consumptions habits in order to better their overall nutrition status. This was not solely limited to changing the types of foods consumed but also encompassed improving hygienic cooking habits and consuming correct portions during meals. The program involved three nutritionists and a close working relationship with the government ministry in charge of nutrition. Cooking demonstrations were conducted wherein participants were shown how to hygienically prepare foods as well as what recommended portions sizes to consume. Unlike many traditional workforce nutrition programs, this one did not provide food directly to beneficiaries but rather provided seeds and fruit trees to plant small at home gardens. This initiative was undertaken to show the workers that growing and consuming certain nutritious foods could be relatively easy and inexpensive. Orange flesh sweet potato is an important food that was incorporated into the program for its high nutritional value. To promote its consumption, vines were distributed to program participants to plant in their home gardens. Somewhat similarly, consumption of beans high in iron was promoted, especially among pregnant and lactating women. A media component was also integrated into the program where in additional nutrition information was promoted among tea workers via FM radio messaging.

"I think those are issues that we're trying to look at. And the major approach we use towards around behavior change communication, because then we wanted people to change the ways of doing things, their ways of their eating habits." -Kenya Company 1

The remaining three companies had not previously engaged in formal workforce nutrition programs reminiscent of that within the tea production sector, however, they all reported having some component of WFN prior to the pandemic. This was in the form of offering food to employees in the workplace setting. Kenya Company 4 provided cooked meals for lunch and breakfast to workers daily at each branch location. Exact types of food provided were traditional Kenyan meals including rice, maize, and Ugali, a dense porridge usually made from white cornmeal. Kenya Company 3 also provided cooked lunches daily typically consisting of vegetables and Ugali. Kenya Company 2 had previously provided canned foods to workers once in the year prior to the pandemic and would sometimes offer food packages during certain seasons like Christmas. Additionally, they provided tea regularly in the 10 and 3 o'clock hours. In typical WFN programs meals are often offered for free or at subsidized prices to employees, however, participants in this project did not comment on the pricing structure for meals provided.

Of the three India companies, two companies (India Company 1 & India Company 3) spoke about prior workforce nutrition efforts in terms of providing food to their direct employees. The remaining company (India Company 2) worked with tea estate managers to provide food rations to several thousand tea plantation workers, but these beneficiaries were not actually employed by India Company 2 so their undertaking did not wholly fit into the traditional WFN structure. India Company 1 had a long history of implementing agriculture-based livelihood and nutrition security projects among small holder farmers, agriculture laborers, women, children, and persons with disabilities (PWDs). Prior to the KFMW grant, the company had undertaken programs such as zinc-fortified wheat distributions to landless farmers, food provisions to PWDs, and seed

distributions. For India Company 3, there were kitchens located in each of this company's facilities which provided meals to workers regularly.

Examination of the data indicated that across all companies, Kenya Company 1, stood out for their efficient and successful execution of the KFMW grant. They seamlessly navigated and problem solved challenges that the remaining companies often struggled with. It is worth noting that this was the only company in the evaluation that had previously implemented a full scale WFN initiative such as that of the Healthy Diets for Tea Communities program. In this way, it may be argued that the company's prior experience with carrying out WFN programming of this caliber provided them expertise to successfully implement the KFMW grant. Alternatively, the other companies may have been at a disadvantage in following suit due their absence of experience with large scale WFN programming. No other notable differences in grant implementation processes across the companies were documented in the context of prior WFN experiences.

KFMW as Workforce Nutrition

Parallel to the kinds of WFN efforts most companies described having in place pre-pandemic, the primary focus of the KFMW initiative was to provide employees with nutritious food in the workplace. Healthy food at work is one of the four domains typically incorporated into traditional WFN programs. Within this domain, an emphasis is placed on the nutritional value of the selected food offerings. Company leaders who admitted to offering cooked meals or take-home foods at work prior to the pandemic did not directly comment on how, if in any way, nutrition considerations factored into the foods offered. However, their general approach in describing the programs suggested that no particular emphasis was placed such considerations.

During grant implementation, all but one company (India Company 2) utilized the grant to provide prepackaged take home food parcels to selected employees. The remaining company also provided take home rations but did so for vulnerable community members who were not their direct employees. The specific foods items included in distribution varied between the two countries and among the companies within them. Even so, all foods provided adequately satisfied the nutritional requirements outlined by GAIN in the initial grant application process. The nutrition guidelines called for dark-green or orange vegetables, yellow or orange fruits, animal source foods, pulses/legumes and nuts, and fortified food products. There were also limitations on the amounts of added sugar, salts, and fats that could be included in the food provided. As such, the specific foods distributed to beneficiaries included but were not limited to fortified cooking oil and maize flour, eggs, citrus fruits, beans, groundnuts, beetroots, and almond packets.

An additional domain typically found in WFN programs is nutrition education wherein the organization educates employees about the significant of a nutritionally balanced diet and how to achieve it. While not required or strongly suggested by GAIN, two companies (one from each country, Kenya Company 2 and India Company 3) indicated nutrition sensitization as a line item on the lists of activities in their grant applications. During the interviews, they were the only companies that reported having implemented nutrition education during the grant execution process. Interestingly, beneficiary survey results showed that 63.8% of Kenyan and 49.4% of Indian respondents said yes to having received some nutrition education during this time. In Kenya, Company 2 held a large food disbursement event where several speeches were given about nutrition, but apart from this, no additional formal education/training was administered to beneficiaries. Another Kenya company (Kenya Company 1) commented that at the time of grant

implementation, several of their factories had previously undergone a nutrition education program with GAIN unrelated to the KFMW grant. Therefore, some farmers who later received support from the grant had some nutritional knowledge, but the grant funds were placed entirely towards food and distribution costs, so no resources were available to put towards formal nutrition education programming. India Company 3 leaders in India, noted that during the KFMW food distribution process, a nutritionist was present and explained what items were included in the food packages as well as their nutritional value and how best to utilize them.

"So we can say the farmers already had the knowledge, because this one had been done prior. But…for the others, no, we didn't get to give them…nutrition information, because of also the grant couldn't um, it was just strictly for food and the distribution costs...We don't have any person that can give them that nutrition information…"- Kenya Company 1

"The one thing we have taken here as a part of the distribution was providing a nutritionist during…So that Whenever we are distributing kits to the beneficiaries, the beneficiary also understand the importance of this kit , the usage of the kit and how important it is and how much nutrition does this kit have..." – India Company 3

The remaining domains typically included into WFN programs –nutrition-based employee health checks and breastfeeding support, were largely absent from the KFMW grant implementation process.

Future Workforce Nutrition Programming

When prompted about future food and nutrition interventions for workers moving forward after the KFMW grant, none of the companies –apart from Kenya Company 1 who was already involved in GAIN's Healthy Diets for Tea Communities program, had definitive plans established. However, most expressed a willingness to partner with GAIN again if another iteration of the grant or a similar program were made available. Several companies reported working on potential programs to continue food and nutrition support within their workforces.

Kenya Company 2 for example, suggested allotting a portion of the organization's budget towards regular food and nutrition support throughout the year. India Company 1 was considering supporting small landless farmers by providing them with zinc-fortified wheat seeds for growing. Other companies including India Company 3, which did not utilize the grant funding to assist their own employees but rather the larger community, did not indicate any future undertakings aimed at targeting nutrition specifically within their workforces.

"…we are planning, because this is kind of an eye opener, although it wasn't there for this year's budget, we can have a budget every year that probably we can be providing our workers with these kind of products, more regular rather than the way which is very unstructured, the way we've been doing it before." – Kenya Company 2

Impact of the KFMW Grant

Beneficiary Reception and Survey Results

In progressing beyond the impacts of the pandemic and the support measures in place prior to KFMW, the research team investigated the actual grant implementation process across companies and the beneficiaries' reception of it. Overall, beneficiaries regarded the KFMW grant positively; 97% and 85% in Kenya and India respectively, reported being "satisfied" or "very satisfied" with the program when surveyed. The support offered through the grant afforded most beneficiaries and their families temporary but notable relief from COVID induced hardships.

Among the total participants included in the surveys, 98.3% in India and 98.9% in Kenya reported receiving food rations during grant implementation. In both countries, most participants –99.3% in India and 95.2% in Kenya, reported receiving their food distributions in the form of take-home rations while a very small proportion reported receiving cooked meals and or snacks and none reported receiving food coupons/vouchers. The top three food types beneficiaries in India reported receiving were legumes and nuts (82.5%), grains, roots, and tubers (74.2%), and

fruits and/or vegetables (25.8%). In Kenya, grains, roots, and tubers (84.8%) and fruits and/or vegetables (71.4%) were also among the highest reported food types with fortified cooking oil (76.4%) instead of legumes and nuts (34.8%) completing the trio. In terms of the type of food support preferred, 83% of respondents in India indicated a preference for take home rations, 12.9% indicated direct cash offerings and 2.2% and 2.6% preferred food coupons/vouchers and cooked meals respectively. The Kenya data showed similar results with the largest proportion of respondents, 65.9%, reporting a preference for take home food rations and the second largest proportion, 15.9%, reporting cash. However, there was some deviation between the countries in terms of the food coupons/vouchers and cooked meals categories. In comparison to India, a nearly 7-fold increase was recorded in Kenya for respondents who preferred food vouchers/coupons (15.2%) while no respondents indicated a preference for cooked meals.

Over 60% of all survey respondents in India believed that the grant support increased their families' overall food consumption and over 50% believed it ensured better access and affordability of nutritious foods. In this country, the grant impact was especially significant for beneficiaries who had been excluded from the government's social safety net programs and had no other source of food and nutrition support during the pandemic. In Kenya, many beneficiaries, and the people they supported were going without meals during this time. The grant implementation actually highlighted the full severity of their situations to some company leaders who had not previously realized it. Here, more than 87.4% of beneficiaries reported consumption of the food by multiple household members. Positive impacts reported by Kenyan beneficiaries included improved access and availability of adequate food (22.8%), decreased food expenses (37.3%), and improved savings (32.2%). Beneficiaries noted that they were regarded highly by their household members for such benefits.

"The beneficiary are very happy about the project. And I remember one of them saying that this particular time COVID has really been, has hit them hard, because some of them are unable to actually get regular meals." – GAIN M&E associate

"Actually, it is really a big help for those as they were not getting any support from other agencies…when we provide this kit to them, they really thank us a lot, we also feel satisfy to help this kind of beneficiary as they don't receive any benefit from government public distribution system." – India Company 1

Grant Duration

While beneficiaries and company management alike were chiefly satisfied with the KFMW grant process, a theme that emerged in terms of impact was a strong desire for a longer grant duration or increased rounds of distribution. These sentiments were more frequently expressed in India than in Kenya. In the former country, some company leaders felt that no sustained impact could be achieved within the short time frame the grant was in place. Similarly, many beneficiaries were disappointed that the grant support only lasted 2 months, after which time they experienced difficulties in affording the distributed foods on their own. Fifty six percent of Indian respondents desired a continuation of the program and 11.8% desired an increase in frequency of food assistance. In a similar vein, some company leaders in India noted that the distribution quantity could not adequately support an entire family for a significant amount of time. Survey results also reflected this sentiment as 13.1% of respondents wanted an increase in the quantity of food assistance and 19.6% wanted the program to expand coverage to include workers' household members. Many beneficiaries in Kenya longed for additional rounds of food distribution. Tea farmers for example requested more support noting that the distribution should not have been a one-time occurrence. Here, 51.1% of respondents voted for a continuation of the program and 8.7% for increased frequency of food assistance.

"…like if we are giving them 1 kg then for how much time it will continue…short impact was there. but not very much. If it was running for 4 to months then it has some impact. But if we are giving them 2 times only then how it will impact. I am not saying people didn't have any impact they have got small benefits from this." – India Company 1

"…it would have been better if ration was given in this way for 6 months, then there would have been a difference in health. Given only 2 times. So what difference will it make?" – Beneficiary survey respondent in India

Impact on Companies/Workforce

To wholly understand the success or lack thereof of the grant and inform recommendations for future programming, data was also collected regarding its impact on the companies/workforces. In both countries, company leaders reported that in addition to the direct beneficiary benefits other outcomes of the KFMW grant were increased motivation, attendance, and productivity within their workforces. In the absence of going without sufficient food and the challenges associated with that, beneficiaries demonstrated a renewed drive to be at work and were better able to focus on their tasks. In accordance with these accounts, some beneficiaries, when surveyed, reported perceived improvements in their motivation and productivity at work. This was more so true in India where 39.1% and 42.2% of respondents reported improved motivation and productivity respectively. However, in Kenya, perceptions of increased work productivity were not measured and only 1 respondent reported increased motivation. Company leaders further shared that beneficiaries built stronger bonds with each other and with their respective organizations as they felt thought of and supported due to the food distributions. Strong sentiments of loyalty to the companies emerged among some workers. Somewhat similarly, one company (India Company 1) found that the grant helped advance their central theme of supporting food and nutrition security in larger catchment areas, this in turn enabled capacity building within the organization and increased its visibility and credibility.

"…people's faith had increased for our organization as we worked and helped during this COVID pandemic" – India Company 1

"Employees are motivated and okay, the work, the output is also better..." – Kenya Company 4

"So…we also saw a rise in productivity in terms of those limited absenteeism from the staff... I mean, the reception was really positive."- Kenya Company 3

Beneficiary Survey Tables

Table 1: Food distribution through the KFMW grant as described by beneficiaries participating in phone surveys

	India				Kenya			
Variable	**Total (%)**	**Company 1 (%)**	**Company 2 (%)**	**Company 3 (%)**	**Total (%)**	**Company 1 (%)**	**Company 2 (%)**	**Company 3 (%)**
Overall	235 (100)	96 (40.9)	38 (16.2)	101 (43)	279 (100)	52 (18.6)	35 (12.5)	192 (68.8)
Nutrition Education (India N=225, Kenya N=279)								
Yes	116 (49.4)	55 (144.7)	3 (3.1)	58 (57.4)	80 (28.7)	9 (17.3)	11 (31.4)	60 (31.3)
No	94 (40)	39 (102.6)	34 (35.4)	21 (20.8)	194 (69.5)	41 (78.9)	24 (68.6)	129 (67.2)
I don't know	15 (6.4)	2 (5.3)	1 (1)	12 (11.9)	5 (1.8)	2 (3.9)	0 (0.0)	3 (1.6)
Received food assistance during the pandemic (India N=235, Kenya N=279)								
Yes	231 (98.3)	96 (252.6)	38 (39.6)	97 (96)	276 (98.9)	50 (96.2)	35 (100)	191 (99.5)
No	4 (1.7)	0 (0.0)	0 (0.0)	4 (4.0)	3 (1.1)	2 (3.8)	0 (0.0)	1 (0.5)
Type of food assistance received during pandemic (India N=231, Kenya N=276*)								
Cooked meal	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (1.8)	0 (0.0)	2 (5.7)	3 (1,6)
Snack	11 (4.8)	0 (0.0)	0 (0.0)	11 (11.3)	4 (1.4)	0 (0.0)	3 (8.6)	1 (0.5)
Take home rations	220 (95.2)	96 (100.0)	38 (100)	86 (88.7)	274 (99.3)	50 (100)	35 (100)	189 (99.0)
Food coupon/vouchers	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Food Support Type Preference								
Cooked meal or snack	6 (2.6)	0 (0.0)	1 (2.6)	5 (5.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Take home rations	191 (83.0)	72 (75.0)	38 (86.8)	86 (89.6)	182 (65.9)	38 (76.0)	25 (71.4)	119 (62.3)
Coupon/vouchers	5 (2.2)	2 (2.1)	0 (0.0)	3 (3.1)	42 (15.2)	0 (0.0)	5 (14.3)	37 (19.4)
Cash	29 (12.6)	22 (22.9)	4 (10.5)	3 (3.1)	44 (15.9)	9 (18.0)	5 (14.3)	30 (15.7)
Other	n/m	n/m	n/m	n/m	5 (1.8)	2 (4.0)	0 (0.0)	3 (1.6)
I don't know	n/m	n/m	n/m	n/m	2 (0.7)	1 (2.0)	0 (0.0)	1 (0.5)
Food Group in Food Assistance*								
Grains, roots, and tubers		96 (100)	38 (100)	36 (37.9)	234 (84.8)	49 (98.0)	35 (100.0)	150 (78.5)

	170 (74.2)							
Legumes and nuts	189 (82.5)	93 (96.9)	38 (100)	58 (61.1)	96 (34.8)	35 (70.0)	18 (51.4)	43 (22.5)
Dairy products	0 (0)	0 (0)	0 (0)	0 (0)	7 (2.5)	1 (2.0)	0 (0.0)	6 (3.1)
Meat, poultry and/or fish	0 (0)	0 (0)	0 (0)	0 (0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Eggs	36 (15.7)	0 (0)	36 (94.7)	0 (0)	152 (55.1)	1 (2.0)	5 (14.3)	146 (76.4)
Fruits and/or vegetables	59 (25.8)	59 (61.5)	0 (0)	0 (0)	197 (71.4)	22 (44.0)	17 (48.6)	158 (82.7)
Cooking oil	n/m	n/m	n/m	n/m	211 (76.4)	34 (68.0)	28 (80.0)	149 (78.0)
Baby porridge flour	n/m	n/m	n/m	n/m	6 (2.2)	6 (12.0)	0 (0.0)	0 (0.0)
Other (Sugary foods, soap, wheat flour, spices, dates, sesame seeds)	110 (48)	2 (2.1)	33 (86.8)	74 (77.9)	3 (1.1)	0 (0.0)	2 (5.7)	0 (0.0)
Family Use*								
Myself	6 (2.6)	2 (2.1)	0 (0)	4 (4.1)	98 (35.5)	13 (26.0)	15 (42.9)	70 (36.6)
My children	1 (0.4)	0 (0)	0 (0)	1 (1)	21 (7.6)	7 (14.0)	4 (11.4)	10 (5.2)
Other adult members in my household	3 (1.3)	0 (0)	0 (0)	3 (3.1)	52 (18.8)	7 (14.0)	8 (22.9)	37 (19.4)
All of the above	202 (87.4)	92 (95.8)	38 (100)	74 (76.3)	161 (58.3)	35 (70.0)	19 (54.3)	107 (56.0)
Other	19 (8.2)	2 (2.1)	0 (0)	15 (15.5)	7 (2.5)	1 (2.0)	1 (2.9)	5 (2.6)
Average number of days food from KFMW lasted (SD)	23.7 (17.6)	20.1 (13.0)	40.9 (21.2)	18.1 (14.5)	34.2 (22.6)	22 (14.1)	40 (27.1)	36.3 (22.0)
Food Distribution Satisfaction								
Very Satisfied	85 (37)	23 (24)	7 (18.4)	55 (57.3)	195 (70.7)	31 (62.0)	29 (82.9)	135 (70.7)
Satisfied	133 (57.8)	68 (70.8)	26 (68.4)	39 (40.6)	73 (26.4)	18 (36.0)	6 (17.1)	49 (25.7)
Neutral	11 (4.8)	4 (4.2)	5 (13.2)	2 (2.1)	6 (2.2)	1 (2.0)	0 (0.0)	5 (2.6)
Dissatisfied	1 (0.4)	1 (1)	0 (0)	0 (0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Very Dissatisfied	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.4)	0 (0.0)	0 (0.0)	1 (0.5)
I don't know	n/m	n/m	n/m	n/m	1 (0.4)	0 (0.0)	0 (0.0)	1 (0.5)

*Respondents could select more than one response.

n/m: not measured

Table 2: Impacts of KFMW grant reported during phone surveys with employee beneficiaries (India)				
Variable	**Total (%)**	**Company 1 (%)**	**Company 2 (%)**	**Company 3 (%)**
Overall	235 (100.0)	96 (40.9)	38 (16.2)	101 (43.0)
Perceived program effects on beneficiaries				
Increased number of foods for self/family consumption	147 (63.9)	71 (74)	17 (44.7)	59 (61.5)
Better availability and increased affordability of nutritious foods	129 (56.1)	74 (77.1)	19 (50)	36 (37.5)
Improved mental/physical health of self/family	148 (64.3)	47 (49)	36 (94.7)	65 (67.7)
Improved worker motivation	90 (39.1)	17 (17.7)	21 (55.3)	52 (54.2)
Improved worker productivity	97 (42.2)	24 (25)	17 (44.7)	56 (58.3)
Improved status of women in the household	99 (43)	21 (21.9)	36 (94.7)	42 (43.8)

Table 3. Impacts of KFMW grant reported during phone surveys with employee beneficiaries (Kenya)				
Variable	**Total N (%)**	**Company 1 N (%)**	**Company 2 N (%)**	**Company 3 N (%)**
Overall	276 (100.0)	50 (18.1)	35 (12.7)	191
Perceived program effects as reported by employee beneficiaries*				
Improved access/availability of adequate food	63 (22.8)	20 (40.0)	4 (11.4)	39 (20.4)
Improved savings	89 (32.2)	13 (26.0)	9 (25.7)	67 (35.1)
Ability to afford household/business expenses	51 (18.5)	11 (22.0)	6 (17.1)	34 (17.8)
Ease financial burden	18 (6.5)	2 (4.0)	5 (14.3)	11 (5.8)
Food expenses decreased	103 (37.3)	15 (30.0)	20 (57.1)	68 (35.6)
Nutrition improved	13 (4.7)	0 (0.0)	0 (0.0)	13 (6.8)
Improved worker motivation	1 (0.4)	0 (0.0)	0 (0.0)	1 (0.5)
Other	4 (1.4)	0 (0.0)	0 (0.0)	4 (2.1)

Table 4: Recommendations and program feedback*		
	India	**Kenya**
Variable	**Total N (%)**	**Total N (%)**
Continuation of program	131 (85.6)	141 (51.1)
Changes in menu/types of food provided	4 (2.6)	2 (0.7)
Changes in type of food assistance	1 (0.7)	6 (2.2)
Increase frequency of food assistance	18 (11.8)	24 (8.7)
Increase quantity of food assistance	20 (13.1)	18 (6.5)
Expand coverage to include workers' family	30 (19.6)	4 (1.4)
Appreciation	n/m	68 (24.6)
Expand variety of food assistance provided	n/m	13 (4.7)
Expand coverage to include non-workers households	n/m	23 (8.3)
Conduct post-project follow-up	n/m	1 (0.4)
Equal distribution across branches	n/m	3 (1.1)
Provide other assistance (school fees, medical aid)	n/m	3 (1.1)
No suggestion	n/m	54 (19.6)
* Respondents could select more than one response. **n/m**: not measured		

Chapter 5: Discussion

The findings from the in-depth interviews and beneficiary surveys highlight the detrimental impacts the COVID-19 pandemic has had on food industry SMEs (in Kenya and India) and their front-line employees. Such workers tend to be vulnerable to food and nutrition insecurity in general, but this has been especially true during the pandemic, and the findings illustrate the potential of workplace-based interventions to address and mitigate this issue. The need for workforce nutrition programs is not new and several companies had mechanisms in place to address this pre-pandemic. Nevertheless, WFN interventions can be particularly valuable during a global pandemic or other public health crises that induce prevalent economic hardships and threaten food systems. Company management and beneficiaries alike praised the KFMW program found it beneficial in both offering much needed nutrition support and in improving workplace output. Despite their value in contributing to a successful workforce nutrition intervention, elements such as nutrition education, breastfeeding support, and employee health assessments were largely excluded from the grant implementation. Additionally, the data suggests that the sustainability of KFMW's impact was negligent given the program's short duration and the small quantities of distributed to each beneficiary.

Consistent with what others have reported, here were significant disruptions in both India and Kenya's food infrastructures in terms of price inflation, decreased availability of food, and compulsory diet modifications. Study participants from both countries faced issues with accessibility. In India however, the data indicates that access was hindered primarily by unaffordability of food commodities while in Kenya, there was an additional barrier of food

unavailability due to lockdown travel restrictions. In both regions, food prices have increased as a result of the pandemic. Yet many front-line food system employees have earned less over the course of the pandemic due to widespread unemployment. In these ways, workers' purchasing capacity for food has notably lessened and many have been forced to alter their usual diets by consuming different –and often less nutritious foods, eating smaller portions, and in some instances, skipping some daily meals. These findings are further supported by Barrett et al.'s 2021 COVID-19 agri-food systems research which found that among the 93% of workers adversely affected by pandemic induced job loss worldwide, food service sector workers were disproportionately impacted. Further, a 68% reported income loss from over 30,000 households in LMICs coupled with a 22.5% increase in the Food and Agricultural Organization (FAO) global food price index caused 45% of LMIC household's to reduce or miss meals.

The COVID-19 impacts identified in this project indicate that food systems in LMICs can be especially vulnerable during global public health emergencies and make clear the need for scalable ever-present interventions that safeguard food and nutrition access. Per research conducted by the International Labour Organization, the current pandemic has shown that low wage front line workers in SMEs are often the worst hit during times public health crises. For this group, workforce nutrition programs have the ability to serve as an urgently needed food and nutrition safety net both during and outside of global health crises. This is especially true now that lockdown restrictions have eased tremendously worldwide and a gradual return to the workplace is underway. Already, many lessons have been learned from the pandemic's shock on agri-food systems leading to technological and organizational innovations designed to reverse current and protect against future disruptions. For example, several food processing businesses have increased investments in robots insusceptible to infectious diseases and movement

restrictions. Many others have adopted novel mechanisms to ensure worker safety such as organized transportation to work and shift rearrangements to adhere to social distancing protocols (Barret et al., 2021). In the same way that the need has been recognized and acted on to develop these mechanisms, employers can follow suit in the context of WFN. Increased investment in and scaling up of WFN initiatives within SMEs can serve as an additional installation along the chain of actions currently being taken to protect food and nutrition security globally.

Examination of the data revealed that prior to the pandemic, several companies were already implementing aspects of workforce nutrition. Most companies did so through daily provision of cooked meals for breakfast and lunch, offering snacks and tea, and in some cases by providing take home canned goods and pre-packaged food baskets during the holiday season. One company's WFN initiative –the Healthy Diets for Tea Communities program, stood out amongst the rest for its scale and comprehensiveness. Through a collaboration between GAIN and the Ethical Tea Partnership (ETP), this program was implemented across tea estates in Kenya and India. Similar to other companies, this program also incorporated direct food provision in the workplace but as a behavior change initiative it went further to also include cooking classes, nutrition education, and seeds to plant at home gardens. The existence of such programs prior to COVID-19 reflect the long-standing need for food and nutrition support among front line food sector workers even before the emergence of a global pandemic. A pre-pandemic study examining the social determinants of health of women tea plantation workers in Assam, India successfully illustrates this point. India's tea industry is one of the oldest and largest private sector employers worldwide, in Assam specifically, approximately 1 in every 5 person is employed by the tea estate sector (Rajbangshi and Nambiar, 2020). The study, which consisted

of focus group discussions with women spanning three different tea plantations in the region, found significant inadequacy in the food and nutrition statuses reported by the workers. Most women reported that due to constraints to be at work on time, they often skipped breakfast in place of feeding their children and finishing household duties before making their way to work. Often, under pressure to meet daily tea plucking quotas, they also skipped lunch. Several women noted skipping these meals because there was simply not enough food for everyone in the family. They opted to just drink tea/water and give what available food there was to other members of the family. Further, while the workers expressed an understanding of what foods constituted a nutritiously balanced diet, they reported not being able being able to afford these items. Many felt that efforts on their part to improve their own nutrition would occur at the expense of that of other family members. Therefore, the case for workforce nutrition is not new but has certainly been spotlighted and made more urgent by the ongoing pandemic.

Both company leaders and beneficiaries reacted positively to the implementation of the grant program. Its benefits were two-fold in that direct beneficiaries and their families received essential food and nutrition support and in turn companies noticed increases in worker motivation and productivity. An aspect of the grant that was highlighted by the project's participants was its emphasis on only offering foods of adequate nutritional value. This demonstrated that workers both understood the importance of balanced nutrition for optimal health and desired foods that qualified as such. Across the companies included in the project, several commented on the ability of the foods provided to strengthen worker's immunity. In the specific context of this research, staving off COVID-19 infections was the primary basis from which concerns about immunity and health emerged, however, the significance of good overall health among employees exists no matter the presence or absence of a pandemic. Good nutrition

is critical for both physical and mental health as it offers both prevention and treatment of certain diseases. Additional benefits include increased energy, reduced fatigue, and improved cognitive performance (Bruins, 2020). Workforce nutrition is an opportunity for employers to contribute to their employees' (especially the most vulnerable) health and wellbeing by supporting their essential nutrient needs. Numerous workplace-based nutrition interventions have already been shown to positively impact employee health. One such intervention occurred among overweight workers in Taiwan (Shih et al., 2019). Participants were given two packs of shakes made from white sweet potato, a healthy source of carbohydrates, and advised to replace two daily meals with the shakes. Per the Ministry of Health & Welfare's guidelines, the nutritional make-up of the shakes met the criteria for a balanced diet product for weight reduction. Additionally, throughout the eight weeks of the intervention, participants in both the control and intervention group attended group and individual nutrition education sessions. All participants were given sample meal plans, recipes, and information about physical activities. Blood draws were performed to analyze aspects including insulin and cholesterol levels. At the end of the intervention, both groups showed significant decrease in daily energy intake. Similarly, there were significant decreases in body weight, body fat and body mass index among both groups, however, reductions across these categories were significantly greater for the intervention group.

Independent of nutrition, numerous positive impacts are critically linked to food security. Mental health is one of the numerous non nutrition specific outcomes critically linked to food security. Company leaders in both Kenya and India shared that general disposition and outlook among beneficiaries in their workforces were visibly improved due to the food distributions. This indicates that improved food security afforded by the grant positively influenced mental wellbeing. Further, more than 60% of beneficiaries reported a perceived improvement in their

own or their families' mental health as an outcome of the KFMW program. These findings are consistent with those of a 2016 study by Jones that analyzed cross-sectional data from the 2014 Gallup World Poll, a series of globally implemented and nationally representative surveys. Jones found that food insecurity was consistently associated with poorer mental health and psychosocial stressors across all global regions (and thus also likely across cultural contexts) regardless of socioeconomic status. Such findings suggested that psychosocial stressors such as worrying about food, disruption of meal patterns, and alterations in food quality and quantity were intensified by increasing food insecurity. In turn mental health status particularly related to stress and anxiety worsened. A more recent study conducted in 2021 examined the association between food insecurity and mental health among low-income individuals during the COVID-19 pandemic. Researchers found that increased food insecurity due to the pandemic was associated with a 257% higher risk of anxiety and a 253% higher risk of depression. Taken together, these findings suggest that improved food security is very likely to result in better mental health or at least lower risks of mental illnesses.

While there are numerous ways to design and implement WFN initiatives, nutrition education is often incorporated as an element, if not already the primary component. Very few companies in this project included nutrition education into their implementation processes for the KFMW grant even though it was a key component laid out by GAIN. Previous research has shown that nutrition education is an important aspect of successful WFN programs both on its own and coupled with other aspects including food provision. Programs that have incorporated nutrition education have seen increases in worker's self-efficacy in healthy eating habits and balancing food intake with physical activity levels (Plotnikoff et al., 2005). This is noteworthy as it demonstrates that offering workers' education in this context improves their overall nutritional

knowledge which can then positively impact their dietary decisions beyond the immediate workplace. Efforts to support nutrition security in the workforce may prove futile if worker's aren't equipped with the resources to make healthy decisions once they leave work. Apart from offering nutritionally balanced meals and snacks at work or giving these foods as take-home rations, there is also the matter of workers knowing how best to prepare foods, proper portion intake, good food shopping practices, and more. These issues can be successfully addressed via educational training within WFN programs thereby improving the likelihood of sustained nutrition-based health improvements among workers.

Similar to the case of nutrition education, periodic employee health assessments and breastfeeding (BF) support are domains often included in WFN programs. GAIN did not call for these components in the KFMW grant guidelines, so they too were almost entirely absent from the companies' implementation processes. However, several companies did focus mostly or exclusively on supporting female workers with the food distribution with the understanding that they were more vulnerable and likely had children at home for whom the food was especially needed. Additionally, several companies distributed specific food items such as fortified porridge flour to households that were found to have children under five years old. Despite these considerations, no attention was specifically given to breastfeeding support during the grant phase nor did any of the companies offer this kind of support prior to the pandemic. Operating under the GAIN's definition, breast feeding support in this context includes workplace programs or policies that enable working mothers to exclusively breastfeed (EBF) for 6 months and continually up to 2 years. Measures to incorporate this may include providing appropriate places and times to express/pump milk during the workday, providing onsite childcare, flexible work schedules, and education/raising awareness among the staff on the importance of breastfeeding.

According to WHO, adhering EBF for 6 months has been shown to be critical in preventing multiple forms of malnutrition including stunting, wasting, and micronutrient deficiencies. There is evidence for the importance of supporting breastfeeding practices in the workplace. A systematic review conducted in 2017 by Dinour and Szaro examined 22 programs within the public and private sector across 10 countries and found that it was possible and more likely for workers to maintain BF while working when their employers provided supports to do so. Further evidence comes from a UCLA study evaluating the effectiveness of CIGNA's corporate lactation program, Working Well Moms. This program aimed to support mothers in their decision to breastfeed during maternity leave and once back at work. Some of the major provision of the program included telephone support during maternity leave, consultation with lactation specialists, onsite rooms for nursing, and provision of breast pumps upon returning to work. Study results showed that the intervention improved breastfeeding duration among women participating in the program. Additionally, while some socioeconomic (SES) factors (job grade and higher education) are typically strong predictors of initiation and duration of breastfeeding, that was not the case for this program. This suggests that breastfeeding support in the workplace has the ability to eliminate some of the disparities in health outcomes often linked to maternal SES.

Regular employee health assessments can also play and important role in establishing effect workforce nutrition programs. There were positive reports about the KFMW food provisions in addressing food and nutrition deficits among the beneficiaries. However, since no baseline and endline health assessments were conducted, no definitive conclusions can be drawn about the interventions effects on participants' physiological state. That is, we have no way of knowing if things such as cholesterol, body mass index, and hemoglobin A1C were significantly altered

either positively or negatively by the program. Similarly, no information is available on how chronic illnesses among the participants may or may not have been impacted. In this way, it stands to reason that WFN programs should incorporate health checks in some manner. Not only do these offer an opportunity to assess the interventions impacts on metabolic wellbeing, but they can also inform initial program design and serve as a monitoring tool throughout the program's duration. Information gathered from health checks can indicate potential gaps and areas for improvement in a given WFN program.

Successful WFN programs almost always deliver a two-fold benefit, employees experience improved food and nutrition support and employers in turn see an improvement in business output. Company leaders in the KFMW project noted improved employee motivation, loyalty, and productivity as well as reduced absenteeism. In all sectors, employers benefit from having a healthy workforce as they often bear the costs for the alternative. In the absence of optimal nutrition, workers are more likely to exhibit unsatisfactory productivity and increased occurrences of diet related illness which leads to heightened absenteeism and presenteeism. For instance, a study by Finklestein et al., quantified the annual costs, including medical expenditures and absenteeism, attributable to obesity among U.S. workers. They found that obesity resulted in significant medical expenditure increases. The approximated annual cost of obesity for a company with 1000 employees was $285,000. An estimate 30% of the obesity associated cost for a given worksite results from absenteeism (Finklestein et al., 2005). Previous research has also documented the effectiveness of workforce nutrition programs on improving work performance and reducing nutrition associated costs. For example, a study by Jensen published in 2011, investigates whether and how WFN policies could improve productivity. It was foun that efficiently carried out programs could improve productivity by some percentage

points and in larger workplaces, these gains were likely to offset the costs associated with program implementation. Employers can also be rewarded in the context of breastfeeding support as there is evidence suggesting less absenteeism amongst workers with infants who are appropriately breastfed because these children typically have lower frequencies of illness (Mills, 2009).

While company management and beneficiaries had an overall positive experience with the support offered through the KFMW grant, many also noted the inability to establish lasting nutritional impact during such as short time frame. Similarly, some beneficiaries detailed that the quantity of food provided in their rations were not enough to feed their entire family for any substantial time period. The length of the KFMW grant period was approximately 2 months with the number of distribution occurrences for individual companies ranging from one to three times. Calculations to determine the appropriate time frame(s) for program implementation for a desired duration of impact is beyond the scope of this project and little to no data exists on the subject. Therefore, we cannot suggest a specific length of time for carrying out WFN programming though, to date, many companies with such interventions have incorporated them into their organizational structures indefinitely. Overall, a top consideration that must take place in the design phase of WFN interventions is the length of the program as it relates to producing a sustained impact for the workforce.

Limitations

While this project provides significant information about the impact of COVID-19 on food and nutrition security and how WFN may be an ideal solution, it is not without limitations. First, all data collection was performed remotely due to travel restrictions imposed by pandemic lockdowns. Consequently, the research team was at a disadvantage from building rapport,

connecting informally with interview participants to ensure consistent follow up, and conducting firsthand observations of grant implementation activities. Our efforts to mitigate this included connecting with company leadership by leveraging our existing relationship with the GAIN country team members. Additionally, our in-country research partners for the beneficiary surveys had extensive experience and called on their expertise to increase receptiveness among respondents. This, in combination with their ability to communicate in local languages as necessary lessened some of the limitations of remote data collection.

Additional limitations are found in the beneficiary survey methodology. In both Kenya, we had to obtain and list of beneficiaries and their contact information from the companies along with permission to contact them. This introduced selection bias, which we attempted to mitigate by using random sampling methods to select which beneficiaries to include in the survey from the contact lists obtained. In India, it was often difficulty to obtain contact information or speak to the correct beneficiary respondent due to limited telephone availability within households. Multiple phone call attempts had to be made in order to connect with the appropriate individual, this difficulty resulted in much lower response rates than initially anticipated.

For some companies, several food distributions rounds occurred as long as six months prior to our data collection. As such, some of the responses received from participants may be subject to recall bias, thereby introducing another potential limitation. However, this limitation was possibly minimized given that some companies were still in the process of food distribution at the time of the evaluation. We also cross reference application and other supplemental documents and for some companies, conducted multiple interviews to elicit consistent information.

Public Health Implications & Recommendations

Taken together, the findings from this project offers evidence in support of translating the KFMW grant process into a permanent workforce nutrition intervention among the companies. Since there is no one-size fits all best approach, each company should tailor their version of the program to best fit the needs of their employees and the organization's capacity for implementation. It is important to take the lessons learned from the initial grant implementation and incorporate them into the emerging programs. The principal lesson being that a longer duration is necessary to establish sustained impact, this is automatically being addressed given the permanent nature of the interventions. Secondly, food and nutrition support go beyond only providing meals in the workplace or to take home. The nutritional makeup of the foods offered matters and must be at the forefront of the intervention design. Further, it is important that nutrition advancements are being made in and outside of the workplace, this is often where nutrition education factors in. Wherever feasible, nutrition education should be incorporated into the programs and should span a range of topics such as the significance of a nutritiously balanced diet and best practices for health food preparation. Additional components that should be considered include breastfeeding support if applicable and periodic employee health assessment.

Moving forward GAIN can support companies in identifying and implementing best practice strategies to scale up already existing WFN programs or develop new ones. GAIN has both the knowledge and experience necessary to successfully serve as a partner in this manner. Additionally, the KFMW grant implementation has generated novel data that can be used to inform the most ideal WFN programming for a given organization. For example, GAIN and company leaders alike are now aware of the potential challenges to carrying out workplace-based nutrition interventions in the COVID-19 context. As such, they are also aware of what

approaches (as tried by the companies during implementation) do or do not work to effectively manage said challenges. There is also increased knowledge of each organization's employee makeup and how they need/wish to be supported during this time. GAIN has the foundational knowledge and expertise required to establish practical, effective, and sustainable WFN programs. This has been demonstrated in part by the ongoing Healthy Diets for Tea Communities and the KFMW programs. In order to continue their mission towards protecting food and nutrition security of vulnerable populations during the pandemic, it is recommended that they work collaboratively with the companies to establish WFN programming befitting of the specific country and organizational context.

Knowledge gaps exist in terms of WFN's potential to mitigate nutritional gender inequities. Women experienced a disproportionate burden of food and nutrition related challenges in comparison to their male counterparts. While there is research that provides evidence for WFN being effective at improving breastfeeding practices among working mothers, the literature falls short in addressing additional gender specific outcomes in a comparative lens. There is existing WFN research that concentrates solely or at least mostly on female participants; however, such works do not focus on investigating the role of the given intervention in addressing nutrition gender inequities. Rather, they examine the impact of the intervention on female participants but do not go as far as to address how such impacts fare against those of male participants. The same is true for research of mixed gender makeup.

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