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Editorial as a Call for Advice

Soon it will be two years since we have been living in the shadow of Covid-19. Each country fights the pandemic the way it can, involving medical professionals. Yet, too often most countries in the world take political decisions without a direct correlation with medical and epidemiological experience, research and knowledge.

Globally, we have succeeded poorly with vaccination. Country performance is very different for different countries, but unless vaccination is global and the approach is proactive, the Covid-19 pandemic will continue.

Such circumstances have formed the background also for the activities and performance of the World Medical Association during the last two years. In reality, we have not met one another in person, but remote communication and distance meetings are not effective. Moreover, at remote meetings the corporate spirit and global view of development and challenges are declining. The WMA has worked hard and seriously and has been very active to promote limiting the pandemic, safety of medical workers and fight attacks against medical professionals.

However, information exchange is slower than we were accustomed to. Local problems, local lockouts, restrictions on medical activities, local discussions seem to be more important to many national medical organizations.

To be honest, I can say that in these two years I have lost the sense of identity and direction of the World Medical Journal (WMJ). The

world's medical information room is inundated with a huge amount of information in a wide variety of electronic formats. Completely new methods for disseminating hybrid medical information have emerged. It seems that printed publications have lost their positions forever. I get the impression that the WMJ is issued in its classical form mainly due to customs and traditions.

Therefore I address my readers in the national medical associations of the world. What are your ideas about the further development of the Journal? I truly believe that it is the time to change the editor-in-chief and my functions should be passed on to a younger, more modern and more energetic medical doctor with better knowledge of languages and information technology, with a wide circle of acquaintances among the world's younger physicians. I will be very happy to transfer my experience to a new colleague, just as I received a lot of good advice and knowledge from my predecessor Dr. Alan J. Rowe.

I would like the Journal to be global, be more philosophical and uniting the interests of all doctors in the world. I would like Covid-19 to give us more knowledge, not only about masks, vaccinations and hospital treatments, but also about prevention, outpatient assistance, medical organisation, rehabilitation and even palliative care. But above all, let us face the future pandemics with confidence and readiness to act swiftly and accurately at any place in this world.

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Health is a Creative Adaptive Process: Implications for Improving Health Care and Reducing Burn-out Around the World



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Abstract

World medicine is currently suffering from multiple crises that can only be remedied by fundamental changes in health care priorities. Both genomic and biopsychosocial research on the basis of human health and well-being show that health and well-being depend on creative adaptive processes and that most common diseases are complex consequences of unhealthy lifestyles and inequitable socioeconomic conditions, not discrete diseases with specific causes. Evidence-based medicine works best for the acute treatment of injuries and rare homogeneous disorders with specific causes, but its benefits are weak and inconsistent for common conditions that are heterogeneous and involve complex adaptive biopsychosocial processes. Treatment guided primarily by symptom-based diagnosis provides little insight into the actual biopsychosocial causes of the person's symptoms and is severely limited in its ability to promote healthy longevity in individuals or to reduce disease burden in populations. Health care that does not effectively and equitably promote the well-being of individual persons and their communities violates a physician's innate sense of vocation and duty, so it leads to burnout among professionals providing health care, as well as dissatisfaction

and distrust by its recipients. World health needs and the professional duties of physicians can only be effectively and efficiently addressed by person-centred approaches to clinical care and by people-centred approaches to health promotion and disease prevention as the major priorities in health care.

Introduction

Much of contemporary disease care is built on a paradigm that assumes people are separate from the rest of nature and under attack from pathogens or traumas that are specific causes of discrete diseases. It originated from scientific efforts to identify separate diseases with a distinctive set of symptoms, discrete clinical boundaries from other diseases, a predictable natural course and outcome, and a specific causal abnormality [1–4]. Put another way, the goal of the discrete disease paradigm has been to “carve nature at its joints” by separating disorders from one another and from healthy functioning by specifying discrete natural boundaries [4, 5]. Natural boundaries require identifying evidence of zones of a rarity in symptoms that are supposed to distinguish each disease from similar conditions, using techniques like

discriminant, admixture, and cluster analyses [4, 6, 7].

Are diseases really discrete?

The discrete disease paradigm may seem reasonable and laudable to those of us who have been professionally educated and trained in this perspective for many years. In fact, it is difficult for most physicians to question the validity and effectiveness of the system of categorical classification of diseases because diagnoses do have practical utility to provide substantial, but only approximate, information about aetiology, treatment, and health outcomes. Disease classifications can provide a simplified account of ideal prototypes that allow physicians to organize their work, simplify communication, and conduct large-scale statistical investigations, even though there are no real discrete boundaries to separate most diseases [5]. For example, there are obviously clinical differences among patients with cardiovascular disorders, diabetes mellitus, obstructive lung disease, cancer, dementia, and depression, but often there are shared etiological influences and clinical overlap because all body components interact in the maintenance of health. Furthermore, as people age, they

frequently have combinations of disorders, making distinctions difficult. The idea that diseases are discrete is more difficult to question for physicians who work in secondary and tertiary care settings that are structured around diseases or organ systems than for generalist physicians who provide a holistic person-centred approach to the patient's presenting symptoms, preferences, and priorities in their health care, rather than viewing them as a case with a specific condition [8].

Nevertheless, there is little evidence that most medical or psychiatric disorders really have discrete natural boundaries, except for some rare conditions [4, 5]. Even when relatively distinct disorders are found by advanced statistical methods, they are only partially distinguished from one another and from normality because they are not fully dissociable from the complex functional systems necessary for the life of the person, who is, in turn, an inseparable aspect of the ecological web of all living things. As a result, despite sequencing the entire human genome between 1990 and 2003, the causes of the common medical disorders are still not precisely specified because they have proven to be dysfunctions in complex biopsychosocial systems. Consequently, the search for precise causes of complex processes and the practical utility of approximate disease categories for classification has distracted medicine from asking the larger questions of "What is health?" and "What is disease?"

What is health?

It is the larger questions about the fundamental nature of health and disease that we must understand in order to prioritize rationally how we can really improve people's well-being and reduce the burden of disease in the world. Our current system of classification of diseases is actually rooted in outdated scientific constructs prevalent prior to the modern understanding of com-

plex adaptive systems [9, 10], the quantum revolution in physics and biology [11, 12], and the recognition that symbiosis and co-operation are more fundamental to all living systems than competition and conflict [13, 14].

Rigorous modern scientific research shows that the well-being of all organisms in the web of life depends on complex biopsychosocial processes that are interdependent, adaptive, and creative, enabling dynamic changes that both shape and respond to changing internal and external conditions [13, 15, 16]. Because of the interdependent functioning of the components of living systems, they function in ways that are qualitatively distinct from machines comprised of independent and separable parts. Rather than being separate from nature and under attack from others, human beings even have the potential capacity to be aware of their being inseparably interdependent with other life forms and more-or-less able to regulate and integrate their own habits, goals, and values to live in harmonious ways that are healthy, satisfying and good for themselves and others [16, 17]. We are less healthy and happy when we revert to an outlook of separation in which fear, immoderate self-interest, and vanity or self-doubt bias our perceptions and impair our awareness of our connections with other people and the mysterious glory of the universe as a whole [12, 17].

When are discrete diagnoses useful?

Nevertheless, categorical diagnoses may also be adequate approximations for monitoring the prevalence of clinical syndromes at different times and locations in epidemiology when it is not necessary to know the precise cause or causes of the syndromes [5]. Diagnoses of discrete diseases are sometimes adequate approximations to treat clinical signs and symptoms acutely, just as there are conditions in physics under which Newtonian mechanics is an

adequate approximation to quantum mechanics when engineers build a bridge [18]. Likewise, the Western paradigm of discrete diseases can be usefully applied by medical specialists to disorders with a specific and consistent cause, such as acute infections by specific bacteria, acute physical injuries, or other disorders with a single specific abnormality (e.g., genetic, metabolic). Sometimes it is adequate in preliminary discussions to use broad categories of diagnoses to distinguish disorders with few overlapping features, such as those treated by different medical specialties, but then assessment and treatment for even the acute condition are still likely to benefit from an expert understanding of the complex alternative pathways to similar clinical syndromes. Physicians have been criticized because they do not have solid evidence from randomized controlled trials or adhere to recommended guidelines for most of what they do [19], but the reality is that greater information has not accumulated or been used because the definitive diagnoses imagined by the discrete disease paradigm itself are unrealistic most of the time and evidence-based guidelines are often not informative for the complex comorbidity of any particular patient [20–22]. Diagnoses are rarely discrete and homogeneous because their cross-sectional features and health outcomes are strongly influenced in complex ways by demographic characteristics, behavioural lifestyles and socio-cultural conditions [23].

In the rare cases in which diagnostic discreteness and causal specificity can be documented, the effective acute treatments (e.g., drugs or procedures) depend almost entirely on the specific and discrete diagnosis, not on the person or their psychosocial, economic, or ecological circumstances. Then evidence-based treatment targets the single specific pathogen or tries to correct the defect or injury by specific drugs and/or procedures. Under these highly restrictive conditions, randomized controlled trials can identify differences in health outcomes

between actively treated cases and controls, which may then provide a consistent guide to effective treatment of individual patients, as is advocated in algorithms for evidence-based medicine.

When are discrete diagnoses not useful?

However, the discrete diseases paradigm with an emphasis on treatment by medical specialists has limitations as a comprehensive clinical approach because the most prevalent medical disorders have fuzzy clinical features that frequently overlap with one another across multiple specialties, have variable natural course and outcome, and causes that are heterogeneous with complex contributions from multiple biological, psychological, social, environmental, and spiritual influences [6, 7, 23–25]. Generalizations from outcomes of randomized controlled trials are also frequently flawed because of restrictive inclusion and exclusion criteria to produce a more homogeneous population in the trial, which is not at all representative of the heterogeneous population of the disorder that physicians treat in clinical practice. For example, age and comorbid conditions are very common exclusion criteria, and results from clinical trials that restrict the upper age of participants are frequently extrapolated to the general older population that they do not represent well, leading to either under- or over-treatment [26].

The discrete disease paradigm also has severe limitations from a public health perspective because there are often, if not always, differences between individual persons in their susceptibility, response to treatment, and long-term outcome, as is well known even for infectious diseases [27], including infections of SARS-CoV-2 for which the socioeconomic determinants are indistinguishable from average all-sources mortality in the general population [28]. The discrete disease

paradigm has also proven to be generally inadequate when extended to conditions in which there are multiple heterogeneous causal factors and biopsychosocial influences on vulnerability and resilience; it is inadequate for such complex disorders because so-called evidence-based treatments, which are based on the standard of average differences between groups, yield weak and inconsistent benefits that are similar for diverse evidence-based or alternative treatments [29]. Put another way, reliance on the discrete disease paradigm is inadequate for most common diseases because it fails to provide reliable guidance on how to treat any particular individual.

The adaptive nature of the processes underlying common and complex diseases also frequently leads to an inefficient and self-defeating treatment process when clinical symptoms and syndromes are the targets of treatment rather than the actual complex biopsychosocial process in the whole person. Over their long evolutionary history, human beings have acquired multiple regulatory feedback processes for maintaining homeostasis and allostasis. Homeostasis involves maintaining body systems (such as blood pH and body temperature) within a narrow physiological range, whereas allostasis involves maintaining stable functional capacity despite changing situations, such as challenges from stressors, trauma, pathogens, and circadian or seasonal environmental changes, which is a natural and unavoidable aspect of adaptation to life [30]. For example, blood pressure is regulated by multiple interactive bodily systems, such as the kidneys, the heart, and the blood vasculature. In response to pain or stressful personal and social situations, blood pressure can increase to dangerous levels. Diuretics may reduce blood pressure initially even if the stressful psychosocial conditions are not corrected, but then the body continues to adapt to the stressful conditions by increasing blood pressure. Other drugs, such as calcium channel blockers, may then be added with tran-

sient success, but the body will continue to adapt by increasing blood pressure in other ways unless the actual cause is corrected. The addition of beta-blockers may reduce blood pressure by reducing the pulse rate but also increase insulin resistance and lead to type-2 diabetes.

The result of treating the symptoms rather than the causes of an adaptive process is polypharmacy, adverse drug effects, and other iatrogenic diseases with only a precarious regulation of symptoms because the actual psychosocial cause of the dysfunction has not been recognized or treated. When one adaptive abnormality is treated, the treatment is likely to induce abnormalities in other systems, generating adverse effects or interfering with the adaptation to comorbidity. The same process of trial, initial partial success and then weak benefits and adverse effects or failure occurs with the most common complex disease regardless of the medical specialty to which the disorder is assigned in our classification of diseases. When this “evidence-based” approach is applied to common complex diseases or multimorbid conditions, the results produce inadequate benefits with no cure, so that people accumulate multiple chronic diseases [8]. This unfortunate result of long-term treatment of multiple chronic diseases without a cure is profitable for medical-industrial disease alliances, but not for the well-being of individual persons or communities, or for the fulfilment of noble aspirations and duties of health care professionals to serve the well-being of others.

What are the major challenges facing medicine as a result of current practices?

Consequently, a holistic biopsychosocial approach is essential for effective and efficient health promotion, disease prevention, and treatment of complex disorders that are strongly influenced by the unique

characteristics of a person, including their personality, lifestyle, and socioeconomic and environmental conditions [31–35]. Strong evidence that the paradigm for discrete diseases with specific causes is inappropriate and has become unsustainable as a general comprehensive model of health care has become undeniable because of (i) the weak and inconsistent results and frequent adverse effects obtained from depersonalized evidence-based treatment for supposedly discrete diseases [33], (ii) the increasing global burden of disease from the high prevalence of people with multiple chronic diseases [8], (iii) the high prevalence of burn-out (40 to 60%) in health care professionals from dehumanized and monetized health care environments [36, 37], (iv) the chronic underfunding of health promotion and disease prevention that is motivated by short-term special interests and falsely justified by policies that assume the adequacy and sustainability of specialized and costly clinical care for discrete diseases as a comprehensive system of health care [38], and (v) the growing pattern of dissatisfaction with disease care along with preference for self-care and holistic alternative medicine, which many, if not most, people find to be more congruent with their own values, beliefs, and philosophical orientation to healthy living [39].

To identify a constructive path to restore medicine to its effective and respected role in society, we will first consider a more scientifically grounded paradigm of health as a complex biopsychosocial process that is creative and adaptive based on rigorous genetic and biopsychosocial research. Second, we will then consider in more detail the inadequacies of the discrete disease model to which most physicians have become accustomed without questioning its assumptions and adverse consequences. Third, we will consider the fundamental shift in perspective underlying integrative medical approaches to person-centred care of individuals and people-centred care of populations. Finally, we make a call for action

on initiatives that can efficiently enhance the health and well-being of both providers and recipients of health care around the world.

Research on health as a creative adaptive process

Human beings are innately resilient

We need to understand the complex processes that promote and maintain human health to make health care systems around the world more effective, efficient, and equitable. To begin that process of understanding it is useful to recall that modern *Homo sapiens* prospered as a species for over 100,000 years prior to the advances in medicine that were introduced about 250 years ago in fields such as pathology, obstetrics, and vaccination. Increased human longevity in the industrial era is largely the result of reduced infant and maternal mortality due to improvements in many factors besides medical care, including nutrition, personal hygiene, environmental control, and socioeconomic conditions [35, 40].

Prolonged healthy longevity after reproductive age has been a human characteristic since antiquity prior to the advent of modern medicine due to innate molecular mechanisms for adaptation to stress, injuries, pathogens, and degenerative processes under conditions that we now can specify from research on the science of well-being [41]. Throughout the ages, people who intentionally cultivated well-being (i.e., a healthy, happy, and good life) have been able to enjoy healthy longevity accompanied by prosocial behaviour and life satisfaction even without the advances of modern medicine [12, 17, 42, 43]. These facts may be startling until it is recalled that, even with all the amazing technological advances in disease care available today, the quality of clinical care only accounts for 16% of health outcomes compared to 84% from socioeco-

nomics factors (47%), behavioural lifestyle (34%), and environmental conditions (3%) [44]. It has always been the lifestyle, socioeconomic conditions, and an individual's personality and associated outlook on life (viz. separateness versus unity, self-interest versus self-transcendence) that contribute most to the health of individuals and their communities [16, 17]. Human beings co-evolved with other components of the web of life so that we have remarkable innate resilience to disease and injury when we are living in ways that naturally promote the health of ourselves, others, and our environment [45].

What are the conditions for healthy living?

As described by Hippocrates and Plato nearly 2500 years ago, healthy life is generally characterized by prudent use of human insight and judgment to regulate our lifestyle and habits in ways that are good for others as well as for ourselves [46–48]. Put another way, when people cultivate the character strengths of being self-directed, cooperative, and self-transcendent, they have the insight and self-control to regulate their habits to live in accordance with the goals and values that promote the physical, mental, and social aspects of health in themselves and their community. They embody and enact virtues including moderation, perseverance, and social justice that correspond well to findings in modern research on the social determinants of health [49, 50]. Most reasonable people in diverse cultures and environments know that they would do well in life to eat nutritious food moderately, exercise regularly, treat others respectfully, act responsibly, and aspire to understand our role in the mysterious wonders of the universe in which we find ourselves [43, 47, 51]. There have always been some remarkable individuals who lived such a good life [12], but at dysfunctional times, like today, there are many who do not. Instead, many acts viciously out of

fear, greed, and arrogance, so that their life is unhappy, brutal, and short. Consequently, many medical sages since the time of Hippocrates have advised their colleagues that “It is more important to know what sort of person has a disease than to know what sort of disease a person has [52].”

The challenge for the modern science of health and well-being has been to be able to measure and understand the philosophical descriptions of healthy life in ways that are valid and objective. Over the past few decades, Cloninger and his colleagues have developed a comprehensive inventory of human personality that measures the biopsychosocial learning abilities that allow a person to shape and adapt to ever-changing internal and external conditions that are essential for human health and well-being [53]. Using the Temperament and Character Inventory (TCI), human personality is based on three genetic-environmental networks for learning and memory that are fundamental to human health: associative conditioning, intentionality, and self-awareness [17].

Three systems for learning regulate human personality and health

Human temperament is based on associative conditioning processes that regulate synaptic plasticity by activating the two major cellular mechanisms for responding to extracellular stimuli that we share with all animals (i.e., the Ras-MEK-ERK and PI3K-AKT-mTOR cascades) [45, 54]. Differences between individuals in their irrational emotional drives (i.e., temperament) can be measured in terms of differences in four dimensions including willingness to take risks or to avoid them (“Harm Avoidance”), curiosity and approach to what is novel (“Novelty Seeking”), desire for social recognition and social attachments (“Reward Dependence”), and perseverance despite inconsistent success (“Persistence”).

In addition, early humans evolved the ability to regulate their temperament intentionally a little less than 2 million years ago, as shown by *Homo ergaster* (“working man”) developing the capacity for being self-directed and cooperative for mutual benefit in social groups using brain systems involving the cellular Calcium-Second Messenger signalling system in the brain network for executive self-control [16, 55]. Then about 100,000 years ago modern *Homo sapiens* (“wise man”) developed the capacity for self-awareness with associated capacities for healthy longevity, creativity, and prosocial behaviours including a sacrifice for others to form communities with trust and altruistic support of one another [16, 41].

Hence health-promoting human self-government is comprised of executive functions for self-direction (i.e., being intentionally resourceful, purposeful, and responsible to achieve personal goals), legislative functions for cooperation (i.e., being intentionally tolerant, helpful, and principled in interpersonal interactions), and judicial functions for self-transcendence (i.e., insight in the appraisal of values and theories, so that a person can identify with something greater than their individual self) [12].

The temperament and character traits can be measured reliably, and they are strongly predictive of differences between people in their physical, emotional, cognitive, and spiritual aspects of health and well-being [16, 17, 56]. The heritability of personality and of well-being is approximately 50% and nearly all of their heritability is explained by 972 genes that are organized in clusters for particular functions that regulate and maintain health. Nearly all the genes are expressed in brain circuits for learning and memory, and over 70% are expressed in nearly all organs and tissues throughout the body, so they are organized in ways that support the adaptive regulation of health for a person as a whole [17].

Health depends on many complex adaptive processes

The organization and development of the human systems for learning to adapt to changing conditions in a healthy, satisfying, and meaningful way is complex [45]. At all levels of expression (molecules, cells, learning circuits, behaviour, cognition), the components interact through many feedback and feedforward loops modulating their functions. At the behavioural-cognitive level, the same traits can have different outcomes (i.e., pleiotropy in genetics and multi-finality in development) and different traits can have the same outcome (i.e., heterogeneity in genetics and equi-finality in development). The genes that regulate the three learning systems are largely separate from one another and are expressed in different brain networks. Nevertheless, they operate cooperatively with one another, and within each system, they function in clusters of interdependent components, not as independent parts like a machine. Much more about this complexity is summarized in more detail elsewhere [45].

The complexity of systems regulating health and well-being is adaptive, that is, it involves learning to adapt to changing opportunities and conditions in order to maintain and improve health and reduce the risk of disorder in response to internal or external stressors and challenges [55]. Such complex adaptive systems allow for plasticity and meta-stability: that is, they allow maintenance of stable functioning despite changing internal and external conditions, but small changes can also lead to major functional shifts at tipping points (the so-called “butterfly effect”) [12]. These properties of plasticity and meta-stability are also discussed in terms of the allostatic load of complex adaptive systems under stressful conditions [30]. When threatened or distressed, a person’s blood pressure is likely to automatically rise to high levels as part of a fight-or-flight response, and their body will strive

to maintain hypertension as long as the threat to survival is present.

People create health

Furthermore, the human system for regulating health is not merely adaptive, it is creative [16, 33]. What is most important to recognize is that human personality is not fixed: it involves learning abilities so that human can deliberately and creatively change their own way of functioning and in doing so actually modify how their genome is expressed through epigenetic regulation by more than 200 long-non-coding RNA genes that are unique to modern *Homo sapiens* [16]. These regulatory lncRNAs orchestrate the functioning of other genes throughout the body to promote human awareness and well-being so that *Homo sapiens* can cultivate practical wisdom. That is, human beings can become self-aware of their own habits, goals, and values, so they can exert self-control over their habits to bring them in accord with their goals and values. This integrative functional process in which we create health is called self-actualization in humanistic psychology [57, 58] and salutogenesis in health sociology [32, 59].

It has long been recognized that health is a complex integrative process that is both adaptive and creative [31, 32]. So how do we promote and create health? Most adults do not respond well to being told what they should do. That approach has been ineffective when presented dogmatically by health care professionals. However, people can be motivated to change their knowledge, attitude, and engagement with healthy living when it is encouraged in dialogue and participation in experiences that allow them to be creative in facing current realities and then to imagine vividly what they want for themselves [60]. Then they are creatively actualizing their own vision of a satisfying and meaningful future, which is more valued by them than transient pleasures and maladapt-

tive habits [47]. Such self-identified meaningful goals motivate people to regulate and change their unhealthy habits to actualize what they aspire to be and to do for themselves and for others. Much more about health care as a creative person-centred process is described elsewhere [29, 47, 60]. The self-actualization process requires the integrative activation of all three systems of human learning in order for a person to bring their habits into accord with their goals and values, as described below. What has been briefly summarized here is intended only to provide the scientific foundation for recognizing why over-reliance on the simplifying and approximate assumptions of the discrete disease paradigm for practical aspects of health care has led us to ignore the underlying creative path to health and well-being. Our ignoring the real pathway to health and well-being has allowed the current confluence of crises in health care to emerge around the world, but our mistakes can be corrected. Now let's examine the limitations of the discrete disease paradigm in more detail to recognize where it goes wrong.

Inadequacies of the medical model of discrete diseases with specific causes

What is called "evidence-based" medicine is hardly what it claims to be because it really provides little or no information about how to treat any individual patient except for people with rare homogeneous conditions with a specific cause and with no comorbidity. Evidence-based medicine is strongly guided by algorithms to treat discrete diseases with specific medications and procedures identified by differences in average health outcomes between groups of people in randomized controlled trials. This has serious limitations because of its false assumptions about disease taxonomy, specificity and homogeneity of causation, and socioeconomic determinants of health.

Even advocates emphasize that evidence from randomized controlled trials must be supplemented by individual clinical experience and patients' choice [61], but there is no systematic method for actually doing so within the discrete disease paradigm. As a result, most medical decisions are currently made without a high degree of scientific certainty [19]. Accordingly, we will consider the challenges of trying to do so in relation to each of these assumptions in turn for clarity.

Diagnoses are not specific enough to be prescriptive

First, regarding *taxonomy*, despite centuries of effort it has never been possible to develop a classification of medical diseases in which individuals have a consistent set of clinical features that are discrete (that is, with a non-overlapping set of pathognomonic features) [5]. Put another way, the symptoms used for medical diagnosis and disease classification are nearly always non-specific individually and the boundaries between neighbouring conditions are overlapping ("fuzzy") even when multiple features are combined in polythetic criterion sets. It has always been hoped and promised that diagnostic criteria based on symptoms and natural history will soon be replaced by specific laboratory tests, but the same problem of fuzziness and non-specificity occurs with laboratory test results, symptoms, and signs of the disorder [3, 4, 18, 62]. Fuzzy boundaries and non-specificity of criteria based on symptoms and/or tests persist because the causes of most medical dysfunction involve complex adaptive systems. In other words, different people with the same diagnosis become ill by way of different developmental pathways in which multiple causal variables interact with one another to produce similar signs and symptoms [25].

Diagnoses of disorders in all medical specialties suffer from the limitations of heterogeneity and complexity, even though it

is most widely acknowledged in psychiatry: that is, all common medical disorders turn out to be heterogeneous in aetiology and development because of their complex biopsychosocial nature. For example, about 40% of the risk of dementia may be delayed or prevented by changes in modifiable lifestyle factors and comorbid conditions, including a reduction in alcohol intake, smoking, obesity, exposure to air pollution, as well as improvements in sleep, frequency of physical activity and social contact, education, cognitive stimulation, hearing, control of diabetes, hypertension, and depression, and prevention of head trauma [63]. As a result, *diagnostic categories lack prescriptive specificity*: the pharmaceutical industry can offer a wide variety of drugs acting by different mechanisms for people with the same diagnosis, which are usually prescribed by physicians to particular patients by trial and error with partial or transient success and no cure. For research purposes, the problem of heterogeneity within diagnostic categories can be partly mitigated, but not eliminated, using advanced statistical methods of clustering, or by the exclusion of “atypical” cases [25]. However, general classification systems are expected to assign everyone to some class, and physicians must treat each person who presents for help without the luxury of accumulating a large series of similar cases or excluding atypical cases.

Diagnoses are highly heterogeneous and imprecise

Second, regarding *causation*, common medical disorders have multiple biological, psychological, and social determinants of risk that interact to influence vulnerability, so their pathogenesis cannot be reduced to material (physical, cellular, molecular) causes [44]. These biopsychosocial processes are not deterministic, but actually are adaptive in the sense that a person has multiple systems of learning and memory that function to maintain homeostasis and allostasis, as mentioned in the introduction.

Consequently, there has been little success in developing specific laboratory tests that identify the actual causes of most diseases, which are most frequently attributable to lifestyle factors (e.g., smoking, drinking, poor diet and exercise, reckless behaviour) and socioeconomic factors (e.g., economic inequity, poverty, inequitable access to care, social distrust, exposure to violence) [18, 49, 64]. Even markers of dysfunction, such as abnormal glucose tolerance tests, do not specify the actual fundamental cause of the abnormality, which may be based on a variety of biological abnormalities and/or on lifestyle, rather than a specific biogenetic defect.

There are claims of a future of precision medicine based on analysis of the human genome [65], which is promoted by researchers and commercial companies, even though the validity of assessments of the vulnerability of any specific individual that is based on individual genes or polygenic risk scores without a personalized assessment of the whole person in their life context is doubtful [45]. In other words, even though genetic testing and genome sequencing are objective and reliable procedures, health does not depend on the average effects of genes acting independently. Rather health depends on the interactions of many genetic and environmental factors operating in complex sets of biopsychosocial pathways that regulate the expression of genes, the co-expression of groups of genes, and the epigenetic modification of genes in response to individual life experiences, socioeconomic conditions, and creative human aspirations [16, 17, 45]. The promise of precise treatment algorithms for common diseases is no more valid than earlier hopes and promises of reductionists over many decades that pathognomonic laboratory tests are expected to emerge in the near future. The undeniable reason for the persistent failure of this promise over centuries is that organs, cells, and molecules do not operate separately in living organisms; rather their functioning is interdependent and adaptive

in order to maintain plasticity and allostasis as needed for health, as described in the introduction.

Health and disease depend mostly on personal behaviours and socioeconomic conditions

Third, regarding the *social determinants of health*, the discrete disease model assumes that categorical diagnosis is an adequate basis to guide effective treatment without regard for an individual's personality, lifestyle, or their psychosocial, ecological, and economic circumstances, such as levels of economic inequity and social distrust in their community. In fact, health outcomes are much more influenced by such psychosocial influences on health, which account for more than 80% of the variability in health outcomes [44, 49]. Even for some specific infections, such as Sars-CoV-2, the social determinants of health are indistinguishable from those for average all-sources mortality, so transdiagnostic health promotion, such as building communities that are more caring, equitable, and educated is likely to be more effective for overall societal well-being, socioeconomic stability, and disease prevention than a large set of specific treatments based on categorical diagnosis [28]. Despite this, current health policies do little to address the actual determinants of disease despite prudent recommendations on what needs to be done [28, 63].

Heritable personality traits account for about half of the variability in physical, mental, social, and spiritual aspects of well-being, including overall healthy longevity and resilience to injury, ageing, and degenerative processes by activating molecular processes that promote longevity, healing, and resilience from injury and disease [17]. It is important to recognize that *what is inherited are systems of learning to adapt in an integrative manner, not fixed traits or separate functions with individual cells or organs* [16, 17, 30]. Three systems of learning underlie

the development of well-being: associative conditioning of habits and skills, intentional self-control of goal-seeking, and self-awareness of creative and flexible means to realize what is valuable and meaningful for one's self and others [16, 17]. Consequently, well-being depends on learning in which nature and nurture are always both involved.

Put another way, health and well-being cannot be reduced to fixed materialistic determinants, so we cannot measure a person's health or even their vulnerabilities without also assessing their habits, goals, and values for their congruence and strengths. First, to predict the physical aspects of capacity for physical well-being and vulnerability to disease with precision, we must know the extent to which a person's habits are in accord with their goals and values. Second, to predict the emotional and cognitive aspects of health, we must also know if they can self-regulate their work, lifestyle, social relationships, and aspirations in ways that activate molecular processes for plasticity, including energy production to support their resilience, cellular maintenance, and repair of injury, ageing and other degenerative processes. Third, to predict the social and spiritual aspects of health, we must know if a person is sufficiently self-aware of creative ways of adapting in ways that will give their life meaning and purpose, as shown by their actively cultivating epigenetic changes in the expression of their genome by wise health-promoting ways of living, such as working in the service of others, letting go of fighting and worry, and growing in awareness of what is meaningful in life.

For example, health-promoting self-actualization of a person's intrinsic aspirations and vocation is observed when a person cultivates positive emotions and social trust by awareness of their inseparable connections with other people and nature [12]. Such social and spiritual aspects of health promotion and maintenance are expressed by frequent acts of kindness, compassion, gratitude, patience, fairness, moderation,

humility, peace-making, and other virtues [47]. Such conscious health-promoting practices are quite distinct from the characteristics of the materialistic life that is strongly promoted in social media in secular societies around the world; what is most often promoted in media is the desirability of self-interested profit-seeking, immoderate consumption, and striving for power or celebrity, which are harmful to health and well-being for both individuals and communities [43].

All three aspects of health (physical, mental, and spiritual) are interdependent, so all need to be cultivated simultaneously, not just one or two at a time. For example, reductionistic approaches that emphasize only one aspect of the path to well-being do not produce consistent and strong benefits: approaches that emphasize materialistic aspects of well-being, or behavioural and cognitive aspects, or social and spiritual aspects need to be combined in an integrative fashion for effective and consistent health care.

Optimal learning about physical, mental, social, or spiritual aspects of well-being occurs in the context of a personal and therapeutic alliance directed toward common goals by the people involved in a person-centred relationship [66]. Such person-centred care has been described as "of the person, by the person, for the person, and with the person" [66]. As a result, continuity of person-centred assessment and care is crucial for effective health outcomes. Person-centred integrative diagnosis (PID) provides a comprehensive biopsychosocial model that includes illness categories in the context of assessments of functioning and quality of life, as well as risk and protective factors, and the person's health experience and values planning [67]. In this way, the person's own resources, habits, goals, and values can be assessed so that both their strengths for positive health and symptoms of ill-health are considered jointly in treatment planning [68]. When health care administrators treat physicians as interchangeable parts, rather

than prioritizing continuity of care by the same physician, much is lost in health outcomes of both the recipients and providers of care.

Need to Prioritize Person-centered and People-centered Values

Both health care and disease care are necessary and complementary

A person is much more than their material body: our health depends on our learning to take care of our individual self and one another in families, communities, and the world. Whereas the medical paradigm popular in the West has usually emphasized technological treatment of discrete diseases by specialists, the medical paradigm popular in the East has emphasized promotion of health of whole person and prevention of disease by person-centred generalists and people-centred promotion of public health. The technological approach emphasized in the West has been excellent for specific injuries and diseases acutely, but it has unfortunately been ineffective for health promotion and disease prevention due to underfunding of public priorities and emphasis on private profit.

These are actually complementary strategies, but overall health promotion and disease prevention are more effective and efficient in improving health care than is the specialized clinical care of multiple diseases separately. Put another way, the shift to focus on separate diseases and specialization in medical education has profited medical-industrial alliances, but it has dehumanized medicine by its failure to prioritize the well-being of the whole person and of the community in health care [69]. Discrete disease care has provided inadequate attention to self-care, motivation of healthy lifestyle, and the social determinants of health. Both disease care and health care have their roles

to play: disease care can be most helpful when its foundation is person- and people-centred health care.

Competition and cost control are not effective approaches to good health care.

When person-centred health care is not understood and practised pervasively as the foundation of medical practice, the benefits of disease care become weak, inconsistent, costly, and inefficient. Consequently, the solution to the rising cost of the burden of disease is not stricter business management and competition in health care. In fact, the inefficiency and dysfunction of health care in developed countries in the West currently is the result of applying a model of health that is an extension of the industrial business perspective to human health care. The Flexner report in the USA in 1910 was funded by industrialists, notably Andrew Carnegie and the Rockefeller. It emphasized biomedical reductionism in medical education and research and has had the long-term effect of reducing person-centred communication and caring for the well-being of patients [70]. Any model of human nature that ignores humanistic and transpersonal sources of satisfaction and value has proven to be inadequate to account for human evolution [16] or the conditions in which health and well-being flourish in individuals and nations [28]. Specifically, it turns out that the separatist view of human nature and functioning is simply not appropriate scientifically for health care and is also doubtful for the long-term prosperity of business [71, 72]. Corporations that are recognized as having the rights of a citizen also need to accept the social duties of a citizen for societies and their economies to flourish, rather than focusing only on continuous economic growth unrestrained by respect for social justice. Socioeconomic inequity consistently leads to the collapse of economies and societies, as is predicted for the

world by 2040 unless we thoroughly revise the priorities of our socioeconomic [72, 73] and ecological [74, 75] policies.

Unfortunately, the proposed solution to rising costs from specialized disease care during the 1980s was to bring in strict business management to maximize profit and/or to reduce costs, but these policies have not proven to be beneficial. Business management, which adopted the profit policies of business with little or no commitment to social justice or personal well-being, was designed to reduce the cost of health care, but it has failed to do so [76, 77]. It has not only failed to achieve its cost-control objectives but has impaired the noble values and ideals of medicine because health care is much more than running a profitable business or implementing scientific knowledge with no recognition or commitment to personal creativity, freedom, and dignity or to social justice and diversity [28, 70].

Furthermore, prioritizing profit over people has been detrimental to the health of both providers and recipients of health care, and has led to high rates of burn-out of providers (viz. 40 to 60%) and to dissatisfaction and distrust of patients along with worse health outcomes when care providers have too little time to know who is being treated and what their life situations and values are [36, 37]. The burn-out of health care professionals is due to the monetization and dehumanization of health care, as is also occurring in most other societal institutions [78].

Person-centred medicine is the foundation for effective health care

Therefore, we propose that the solution to the current crises in health care is the recognition that effective and sustainable health care for the vast majority of disorders of health needs to adopt a person-centred and biopsychosocial approach that recognizes the intrinsic dignity of every person and

the interdependence of the physical, mental, social and spiritual aspects of well-being. The science of well-being is rigorously documented now and reveals the serious misconceptions and limitations of the discrete disease paradigm of health care, which prioritizes costly technological treatment of the ills of unhealthy lifestyles and inequitable social conditions while neglecting the actual causes of disease. Policies for education and treatment are failing to provide for the health care needs of people in ways that are affordable, efficient, and effective in the long term.

Call to action

Medicine is now in several interrelated emergencies that are not sustainable: escalating disease burden, weak and inconsistent efficacy, burn-out of providers, and public distrust and dissatisfaction. There is an urgent need for change.

What we know now about the basis for health and well-being calls for a shift in the priorities of medicine around the world. We need health care systems that are more equitably accessible, more effective in promoting health and preventing disease, and less costly. Priorities need to address the major psychosocial determinants of health that promote healthy longevity, rather than prioritizing costly technologies for acute care of dysfunctions that becomes chronic while neglecting the psychosocial determinants of health.

At the individual level, the health care environment needs to be personalized and humanized for all the providers and recipients of care, rather than treating persons like they were material robots and objects on an automated assembly line. At the population level, more recognition is needed about the interdependence of diverse communities around the world in order to reduce the global burden of disease in ways that are equitable, efficient and effective.

In summary, health care around the world would benefit greatly if medicine as a profession were to declare decisively that its primary purpose to serve the health and well-being of people can only be effectively addressed by considering all the major biological, psychological, social, and ecological determinants of health systematically. That priority of purpose needs to be sustained and developed by adopting universally shared values to achieve that purpose. Then clinical units serving the needs of communities need to drive the system to fulfil their purpose in unison with other components of an integrated system of universal health care. The role of management is to support the fulfilment of this priority as a facilitative component of a diverse and multifaceted system, no central bureaucratic control for extraneous goals of profit and politics that interfere with the autonomy needed by medical experts for flexible day-to-day functioning to address diverse needs of individuals and local communities in a person-centred manner [79].

Much needs to be weighed in order to act quickly and prudently about how to make transitions that are needed in education, clinical practice, administration, and funding priorities. The current paradigm of discrete diseases is outmoded, and the rationale for prioritizing disease care over person- and people-centred health care is invalid, harmful, and inefficient. Denial and procrastination about the inadequacies of current priorities in health care policies are no longer sustainable – medicine throughout the world needs to recognize that health care is primarily a complex and creative adaptive process of self-care, health promotion, and disease prevention, not a clinically managed multitude of chronic discrete diseases. People and communities can improve their health most effectively and efficiently by individuals learning how to live healthy, happy and good lives – that is, lives that serve the health and happiness of others, not just themselves. This is a lesson we are all learning and need to share with those willing to listen and take action.

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Self-Care, Inter-Care and Wellbeing in COVID-19 Times at the 13th Geneva Conference on Person Centered Medicine



Juan E. Mezzich



Jon Snaedal

A humanistic and integrative response to the limitations and challenges of contemporary medicine is being offered by the programmatic movement built by the International College of Person Centered Medicine (ICPCM) in collaboration with a large number of global health institutions [1]. Initial steps from 2005 to 2008 took place at the World Psychiatric Association (WPA) in the form of an *Institutional Program on Psychiatry for the Person* [2, 3]. Since 2008 to date, it is being extended to medicine and health at large and has matured concepts and procedures through annual Geneva Conferences. In these conferences, each receiving valuable support from the World Medical Association (WMA), person centered medicine has been addressed

from various thematic perspectives followed by publication of a declaration on respective themes. In addition, since 2013 International Congresses on person centered medicine have been held across the world, including Zagreb, Buenos Aires, London, Madrid, New Delhi, Tokyo, Montevideo and Kuwait.

These declarations, published on the website of the College [4] involve placing the person in context as the center of the concept of health and the goal of health actions, and proposing clinical care as informed by evidence, experience and values [5]. It also involves the empowerment (rights and duties) of persons to care for their own health and that of others in the community.

An innovative and virtual 13th Geneva Conference on Person Centered Medicine, *Self-Care, and Well-Being in Pandemic Times* was held on 5-7 April 2021. The program designed by Robert Cloninger, Professor of Psychiatry and Genetics at Washington University, St Louis, and Austen El-Osta, Director of the Self-Care Academic Research Unit (SCARU) at Imperial College, London covered the main theme of the event through five symposia as follows: General Health Strategies, Self-Care & Person-centeredness in Pandemic Times, Self-Care Measurement and Determinants,

Concepts of Well-being and Self-Care amid Social Disruption, Self-Care & Well-Being in Contemporary Society and across the Life Cycle; and the Role of Public Health Systems & Professional Organizations in Self-care and Health Promotion in Pandemic Times.

The program also included four panels. One Panel on Advances on Mental Health discussed person centered psychiatry and the World Psychiatric Association Action Plan 2020-2023; disasters and mental health, person centered clinical care and medical education in Latin America, how hermeneutics may promote person centered mental health in pandemic times, the pandemic impact on LIMIC mental health, coping with death and anxiety as an ICU psychiatrist and, community development, person-centered medicine and women's mental health among other interesting presentations.

A second Panel on Advances in General Practice covered: The urgent need for people centered primary care – the case of COVID-19 in Bolivia; Critical gaps in understanding people-centered care Lessons from the pandemic in Mexico; Latin-American perspectives on self-care and well-being in pandemic times, among others.

The third Panel on Public Health included presentations on Contributions of a National Primary Care Registry to People-centered Public Health; Person-centered approach to non-communicable diseases in pandemic times; Global health security & pandemic preparedness; Age in times of a Pandemic: Some population centered public health aspects; Experience with person centered medicine for the education of medical students; Fostering Person-Centered Medicine in Times of COVID-19: The Uruguayan Experience; and Social determinants of health in Latin America during pandemic times.

The fourth Panel on Person-Centered Nursing in Pandemic Times included presentations on Impact of COVID-19 on nurses and person centered nursing; The duty to care dilemma and the psychological well-being among nurses in pandemic times: Preliminary findings from a cross-sectional study in Chile and Spain; Public health measures in Community Centers in the face of the COVID-19 pandemic; Aspects of work of recent years and reflections on self-care and the pandemic in Norway.

The program also included a session on Brief Oral Presentations. The topics covered were: The origins of Médecine de la Personne: Tournier's legacy; Virtual Environment as a Factor of Adaptation in the Face of Social Constraints; Integrating self-care into mainstream health service; Art and Literature as Therapy for Healing and Health Promotion; Quality Circles – Learning processes of participants and the potential for strengthening the work in self-help groups; Self-Care and wellbeing in older persons during pandemic times; and Self-Care and wellbeing in families during COVID-19.

At the ICPCM General Assembly, Ih-san Salloum (WPA Classification Section Chair) was elected President. An important session was dedicated to the Paul Tournier Prize, a yearly award supported by the



ICPCM and the Paul Tournier Foundation to recognize academics who had made major contribution to Person Centered Medicine internationally. The Paul Tournier Prize for 2020 was presented to George Christodoulou and John Cox, and that for 2021 to Jim Appleyard. In order to extend the impact of the conference, a 2021 Geneva Declaration on Self-Care, Inter-Care and Well-Being in Pandemic Times was issued. It is displayed in full here.

Geneva Declaration 2021 On Self-Care, Inter-Care and Well-Being in Pandemic Times

Emerging from the 13th Geneva Conference on Person Centered Medicine organized as a virtual event on 5-7 April 2021 by the International College of Person-Centered Medicine (ICPCM) in collaboration with the World Medical Association, the International Council of Nurses, and the Pan-American Health Organization.

Considering

1. That person centered medicine (PCM) focuses on the health, needs and values of the whole person in their context. People-centered healthcare extends the concept to individuals, families, communities and society as a whole, thus shaping the health of a person through shared determinants and social interconnectedness, making both concepts complementary.
2. That health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity as affirmed in the WHO Constitution. This cannot be achieved by governments, the healthcare system and healthcare professionals without the full involvement of all in the community as proclaimed in the Alma Ata Declaration: (Integral care of all by all), and in

the ICPCM Montevideo Declaration 2020 (Persons-centered integral health care). Consideration of other general social sectors is fundamental in order to attend to the social determinants of health and the UN Sustainable Development Goals.

3. That the dignity and responsibility of each person implies that individuals have the right to health and the duty to participate individually and collectively in the planning and implementation of self-care and care for each other in various contexts including health promotion, disease prevention, health restoration and palliative care.
4. That promotion of PCM, self-care and inter-care can effectively improve the quality of life of individuals and the wellbeing of communities. While Self-Care implies the cultivation of healthy lifestyles, avoidance of risk, maintenance of mental well-being, strengthening of health literacy, and the rational and responsible use of professional healthcare professionals, products and services; Inter-care extends the concept to the interconnectedness of the self with others by way of their capacity to care for each other related to patients, families, the health and social care workforce, the wider community and the environment at large, connecting to the collective wisdom of ancient cultures.
5. That self-care and inter-care within a health framework that involves the government and all stakeholders, can benefit from multisector support on training and properly evaluated procedures, medication and technology.
6. That the progressive monetization and dehumanization of society's institutions including those actors and organizations that constitute the medical infrastructure is undesirable and counters the public interest. Medicine as a field has been commercialized and prioritizes a biomedical individual disease focused approach to the exclusion of other approaches, including a whole person-

centered approach that seeks to promote and preserve the health of persons and the general public in a humanistic and equitable manner.

7. That the response to the COVID-19 pandemic has highlighted an imbalance between how funding is prioritized for medical-industrial complexes (technology) to the detriment of public health infrastructure (services), leading to widespread burn-out in healthcare providers and the erosion of trust. This demonstrates the need for well-integrated, balanced and resilient healthcare systems with humanistically-oriented, scientifically informed and competent governments, able to adapt the public health systems to evolving needs and to hold the health industry to account in promoting effective self-care and inter-care policies.
8. That the pandemic exacerbated health inequity caused by socio-economic and ethnic disparities. This calls for the wider implementation of people-centered care that is culturally informed and promotes solidarity, equity and social justice.
9. That the actual broadening of epidemiological concerns highlighted by the pandemic encompasses non-communicable and communicable diseases, multi-morbidity, mental health challenges, their interactions and syndemic complexity, all of which reinforces the importance of championing comprehensive, integrated and people-centered healthcare.
10. That the International College of Person-Centered Medicine, through its Geneva Conference and International Congress Declarations – and those of the Latin American Network of Person-Centered Medicine in collaboration with the Pan-American Health Organization- has proposed person-centered paradigmatic health concepts and procedures, articulating science and humanism to address broad health challenges including the current pandemic.

We call for

1. Health policies, services and actions that include person- and people-centered self-care and inter-care practices aimed at promoting individual and collective well-being.
2. Educating people about health and its determinants and providing them with reliable and unbiased information and training to promote self-care and inter-care encompassing a wide range of person-centered activities. This includes enhancing people's awareness of the Seven Pillars of Self-Care and the emergent concept of inter-care.
3. Examining the relationship between people's health and their environment and the need to support them through well thought-out economic and social development policies that incorporate person-centered self-care and inter-care policies and practices.
4. Broadly engaging all societal institutions to affirm healthcare as a human right and to uphold humanism in medicine. This involves the accountability of governments, health systems, health care professionals, health industry and the community at large in order to conduct and attain fully ethical health care.
5. The rededication of health systems and public health infrastructure to address the social determinants of health and to attain the Sustainable Development Goals promoting health equity. These are fundamental requirements to activate self-care and inter-care, and to promote well-being, particularly when facing pandemics and other disasters.

6. Building public health and educational structures to effectively promote social trust, social justice and social equity to support both the mental and physical health and well-being of informed, self-aware and empowered communities.
7. Empowering people to become active in the development and monitoring of the proposed innovative health services and policies as well as creative protagonists of their own health. The latter would involve awakening individual and community self-awareness, self-reliance and inter-care solidarity that may enhance the quality of life for all in a way that is congruent with personal and community goals and values.
8. Promoting cooperative international leadership to coordinate cohesive global responses to pandemics and to address the underlying causes of failure in many countries to strengthen their health systems and policies, and to attend to the needs of the general population with dedicated efforts to support marginalized communities. This should lead to the activation of mechanisms that promote and accelerate universal access to vaccines and other effective public health measures.
9. Examining and documenting through pertinent workgroups the fundamental relationships between self-care, inter-care, well-being and person-centered integral healthcare in response to the challenges of the COVID-19 pandemic.
10. Committing the International College of Person-Centered Medicine to upholding and fulfilling the above recommendations in collaboration with like-minded groups and institutions.

As Conclusion, one could say that the 13th Geneva Conference on Person Centered Medicine was quite successful in terms of the interest of its themes and the quality of its presentations as well as because of its virtual format, imposed by the COVID-19 Pandemic, which allowed the participation of speakers and audience from across the world.

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COVID-19 the Need to Act, to Learn and to Prepare – Lessons for the Next Pandemic – the Experience of Norway



Marit Hermansen

The Swine flu of 2009 revealed major deficits in Norwegian pandemic preparedness. Since then, despite several evaluations and studies, little progress has been made in rectifying the serious shortcomings revealed. Influenza epidemics of varying degrees of severity have repeatedly reminded us of the potential consequences a pandemic could have on societies and health services as demonstrated by the Asian flu of 1956 to 1958 and the Hong Kong flu of 1968 to 1970. Outbreaks in recent decades have also provided warnings; the Bird flu of 1997, Sars in 2002–2003, the Swine flu of 2009 and the MERS outbreak of 2012.

The experience in Norway seems to indicate that the necessity of good levels of preparedness is “forgotten” after an event. The evaluations and studies of the 2009– pandemic indicated a lack of:

- Intensive care units
- Stockpiles of personal protective equipment

- Medical technical equipment
- Registers on critical equipment
- Plans on how to rapidly increase the overall capacity
- A joint national system of contact tracing
- Plans for the operation of testing stations and contact tracing
- Plans and tools for the identification of and vaccination of vulnerable groups.
- A comprehensive database of contact details for general practitioners and local public health officers

The same deficiencies have been witnessed during the Covid-19 pandemic.

While we may now see signs of the current pandemic receding, we need to start preparing for the next.

The NMA's evaluation [1], published April 2021, is based on descriptions and input from its members and officials who have been at the front line of the pandemic. In this article, to a large extent based on the Norwegian Medical Association's evaluation of the first year of the Covid-19 pandemic, we will describe the Norwegian approach and key learning points from the period.

We will try and identify key failings and key success factors, ending with some general perspectives on factors that have benefited Norway in its attempts to manage the pandemic.

The message from the Norwegian medical experts is that despite failing to maintain an adequate level of preparedness in the hospital sector, lacking a systematic preparedness at the municipal level, a failure to secure adequate stockpiles and secure supply lines

of personal protective equipment and other essential materials, during the Covid-19 pandemic, Norway has experienced lower-than-normal mortality, no breakdown of the health care system, a remarkably high level of vaccine acceptance and maintained levels of trust in the political system. This outcome is due to an interesting mix of effective governance from national politicians and health care officials, an extraordinary mobilisation of resources in the health care service, a high level of trust in the population and an extraordinary effort by local health officers. Such a combination of factors cannot be counted on for the next pandemic.

What happened – Timeline February 2020 via three waves to end of summer 2021

February 26, 2020, the national broadcaster in Norway reported the first case of COVID-19 in the country [2]. Subsequent weeks would see rising figures, one of the main sources would be travellers returning from a winter vacation in Europe. On March 12, after increasing public pressure – and following the example from Denmark- the government implemented the strongest restrictions on personal freedom in peacetime, albeit stopping short of curfew. Schools and kindergartens were closed with exemptions for the children of key workers. The government recommended teleworking for all who were able to. Travel on public transport was discouraged, in order to make this a safe option for key workers, travel abroad was banned for health personnel, quarantine was introduced for people having been abroad in the previous 14 days, etc.

This first phase saw shortages in personal protective equipment in hospitals, elderly care institutions and primary health care. Furthermore, it soon became clear that the country's intensive care capacity became stretched, even at the very low levels of infection witnessed during the first wave. Test capacity was also low, with strong recommendations to only seek testing if the person was symptomatic. The low capacity stemmed from a lack of test kits, poorly developed systems to analyse tests and poorly developed systems to register and log positive tests.

The infection numbers declined soon, and in early May, schools and kindergartens were back in operation, alongside many commercial services. The situation seemed under control until late summer, when isolated outbreaks connected with e.g., weddings, industries employing migrant workers were reported. Late October, the second wave struck, and stronger measures were again introduced – although less restrictive than the first wave. Oslo saw these restrictions being lifted only toward the summer of 2021 – having gone through a third wave. At the time of writing – the situation seems again to be partially under control, with a very strong level of vaccine acceptance in the populace and while the delta variant – the variant of current concern – is dominant, and infection numbers are rising – the situation seems to be under control [3].

Primary health care service as the front line

In the Norwegian experience, a well-developed primary health care system composed of general practitioners and specialists in community medicine is a prerequisite to effectively deal with the current and future pandemics [1].

One of the key success factors in the management of the first and second waves of

the pandemic has been a strong, well-functioning primary health care service. The organisation at the municipal level of testing, isolation, contact tracing and quarantine has clearly reduced the pressure on hospital capacity.

This approach has however highlighted other bottlenecks in the system such as the lack of efficient ICT tools for communication between local health officers and central health authorities, making coordinated efforts more demanding and time-intensive. A system relying on primary health services to the extent seen in Norway needs, in the opinion of the Norwegian Medical Association, to be more resilient.

Factors to achieve this would include a more central role of local public health officers in the management structure of the municipalities, strengthened capacities of the local public health officer function and reducing the reliance on individuals.

Hospitals with sub-optimal capacities

As the first infections in Norway appeared in February 2020, it became clear that no hospitals in Norway were adequately prepared for such a situation. The first phase of the pandemic showed that Norwegian hospitals are still poorly equipped to handle a major pandemic [1].

Over the course of the previous decades, the number of hospital beds and Intensive care units has been reduced. The stockpiles built up after the Swine flu of 2009 were done away with, and new stockpiles of equipment necessary in a pandemic were not established.

Several reports since the year 2000 have indicated the lack of concrete plans, of resources (e.g., respirators), of exercises of supply security and of other equipment.

Norwegian hospitals were despite these shortcomings not overrun by Covid-patients during the first wave of the pandemic in the spring of 2020. The main reason is the very low levels of infection and disease compared to many other countries. The capacity of hospitals was not exceeded, hospitals did not run out of personal protective equipment and testing capacities were under less stress than in many countries. The Government's decision to close most public activities, including schools and kindergartens, is believed to have had a decisive effect on limiting the extent of infections. Decisions to put many elective procedures on hold as well as the well-developed primary health care system mentioned above furthermore contributed to reducing the strain on hospitals.

Had the government's response been less resolute, or implemented at a later stage, it is believed that Norwegian hospitals would have found it difficult to manage the situation without serious negative consequences.

Communication as key

The pandemic has underlined the need to invest in more effective tools for communication that may be adapted to different situations. Digital communication platforms have allowed large parts of the workforce to telework, freeing up public transport capacity and making it easier to maintain distance. We have also seen how many meetings may just as well be carried out via online platforms instead of face to face.

Experience with e-consultations indicates that more consultations can be carried out online. Knowledge on patient outcomes is however lacking, and the physician will always need to consider on a case-by-case basis whether e-consultations maintain patients' safety and efficient operations. It is also clear that certain specialities lend

themselves more easily to e-consultations than others.

While Norway, in general, is characterised by high penetration of digital public services, strong and reliable internet connections and a high degree of computer literacy in the population, the pandemic has illustrated how many key systems fail to communicate with each other appropriately [1].

This situation often leads to the physician resorting to pen and paper and regular mail as the interface between systems, rather than logging into several separate systems in order to punch the same information multiple times.

Similarly, we have witnessed how important it would be for the authorities to have an overview of contact details for the local public health officers in case there is a need to communicate contact tracing efforts, test results and the need to introduce quarantine and isolation.

A contact tracing app was developed by the Norwegian Institute for Public health but was suspended due to data protection issues. Improving these shortcomings, the app was later reintroduced – but failed to generate sufficient use to be an effective tool. Such tools would also necessitate enough testing – which was not in place until later stages in the pandemic.

A very high vaccine acceptance

As vaccines were being developed and approved, the national authorities entered into cooperation agreements with the EU on vaccine deliveries. As a result, the arrival of vaccines mirrored the situation in EU member states. A national vaccine programme was instituted, with geographical distribution according to the distribution of priority groups. The main target of the programme was to reduce mortality. The vaccines employed during the first

phase of the programme were from Pfizer/BioNTech, Moderna and Astra Zeneca. The programme has been designed by the National Institute of Public Health [4] and implemented by municipal authorities. High-quality public registries and high penetration of digital communication tools in the populace has allowed for a strongly structured queue system, where the individual citizen is contacted directly and offered a vaccine appointment at a clinic close to his or her residency.

In March, cases were reported of deaths associated with the Astra Zeneca. According to a report published in the New England Journal of Medicine [5], by researchers at the Rikshospitalet in Oslo, the case histories of the first five deaths reported, indicated a powerful immune system response as causing thromboembolic events. Following these cases associated with the Astra Zeneca vaccine, and similar cases reported from other countries, associated with the Janssen vaccine, the health authorities decided to remove these vaccines from the national vaccine programme. The Janssen vaccine was further assessed, and decided to be offered on a voluntary basis, but with strict criteria. The Norwegian Medical Association has strongly advised its members not to administer this vaccine, due to the potential risks associated with it, and the conclusion that the risk of, in Norway at the time being, of severe side effects from this vaccine, is greater than the risk of severe Covid-illness.

At the time of writing, the acceptance levels of the vaccines against COVID-19 are exceptionally high, reaching 98 % of certain cohorts. While there are indications that the acceptance rate is unequal in different groups of the population – the data is very promising. It could be argued that this is indicative of a very high level of trust in authorities, also reported in other instances [6]. Current projections indicate that the vaccine acceptance rates will be above 90 percent of the target groups by

the end of October (all citizens above the age of 18).

Levels of trust – a resource not to be squandered

According to an article from Statistics Norway [6], Norwegians, and Nordic citizens generally have a high degree of trust in different political institutions. This high level of trust has been expressed during the current pandemic as well. There has generally been a high degree of acceptance of the measures adopted, and while the measures introduced to increase social distancing has been moderate compared to some countries, evidence from e.g., mobile phone networks indicate that they have been quite effective in reducing the mobility of the populace.

As in most countries, there have been examples of protests against the restrictions, against the use of face masks and other policies implemented. A most disagreement has however been challenged through public debate and professional discourse on the effectiveness and the need for different measures, differences in professional opinion on the modalities of the vaccine programme, etc.

We would argue that the level of trust in our population to a large degree stem from a well-functioning public sector, with universal health coverage and similar service level provision to all groups in society. We would also argue that such a level of trust is a vital resource for the authorities but also for the health care service. It means that less resources are required to ensure compliance with medical advice. It means that the population is responsive to contact tracing and, in most cases accept rules on quarantine and isolation. It also seems to translate into a very high level of vaccine acceptance without the need to offer incentives beyond the protection against disease.

The role of the Norwegian Medical Association

The Norwegian Medical Association has traditionally maintained strong cooperation with health authorities, not least in terms of channelling professional medical advice to policymakers. During the first phases of the pandemic, as the health care services of several countries became stretched beyond capacity, it became clear that guidelines were needed to assist prioritization within different specialities and patient groups. Through its colleges, the Norwegian Medical Association, therefore, compiled comprehensive advice on which treatments to prioritize should resource become stretched [7].

The Journal of the Norwegian Medical Association [8] took early measures to invite physicians to present Covid-19 case descriptions in order to facilitate rapid dissemination of the rapidly increasing knowledge on the virus.

Furthermore, several webinars were organised where physicians from different parts of the country exchanged experiences

The Association furthermore took measures to facilitate members' ongoing work during the pandemic – negotiating special rates and compensation schemes for physicians needing to work beyond normal working hours and for physicians losing income due to quarantine and other restrictions. The Association of General Practitioners and the College of General Practice established a task force to provide professional advice to general practitioners, to share practical solutions to prioritise capacity at the local level and to negotiate compensation schemes for general practitioners who had to quarantine or isolate due to Covid-19.

Ethics in a pandemic

Despite our efforts to continually update our ethical considerations, a new crisis will bring new ethical dilemmas. Some of these dilemmas pertain to society at large, others to us as a medical profession with responsibility for all our patients.

During this pandemic, we have seen civil liberties constrained in order to control infection rates. The closing of services and maintenance of social distance has and will carry costs to individuals and society. We expect that rates of depression and feelings of isolation will rise. We fear children needing support have received less than needed, exacerbating their situation.

When treatment capacities are under strain, we need to be prepared to prioritise and triage. We found that engaging with our colleges to identify key priorities for treatment was a valuable exercise that we will find a use for also in the future.

A pandemic shows us the necessity to think globally, and to act both locally and globally. We need to consider the balance between caring for our own populations and striving for global solidarity. In an interconnected world, we cannot defeat a pandemic with national measures only. Discussions in the Medical Ethics Committee of the World Medical Association will surely reflect this in the years to come.

COVID-19 has shown us again how vulnerable our societies are to new diseases. We believe that a fundamental lesson learned is that we need to strengthen preparedness for new diseases. It is time to put health first.

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Marit Hermansen,
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Norwegian Medical Association

The Coronavirus situation in Finland in brief (11th of August, 2021)



Kati Myllymäki

The population of Finland is 5,5 million.

- Reported cases in total: **114,281**
 - 700-1100 new cases daily in August – mostly delta-variant
- Tested samples in total approx. **6,105,900**
- Cumulative number of **deaths** associated with the disease: **995**
- Number of patients in specialised medical care wards: **50**
- Number of patients in primary healthcare wards: **14**
- Number of patients in intensive care: **19**
- 67% of the population have received their first vaccination
- 39% of the population have received their second vaccination
- Vaccination for 12-15-year-old children started in August, just before schools opened after the summer holidays

Source: Finnish institute for health and welfare <https://thl.fi/en/web/thlfi-en>

COVID-19 pandemic has affected whole society for 18 months as offices changed to remote work, theatres, cinemas, concert halls, swimming halls, health clubs were closed and even secondary and technical schools, as well as universities, went virtual. Many restaurants were closed or the opening hours were strictly limited. In March 2020 also the southern part of Finland (capital region) was isolated from the rest of the country because the virus was spreading so rapidly. I must say it was most peculiar to see roadblocks and police guards assisted with soldiers on the border of our southern province. When lockdown and summer-time slowed down epidemic this isolation was cancelled after a couple of months. I must say that I never could have imagined seeing roadblocks and soldiers between Helsinki and my hometown in peacetime. Maybe that shows that we are at war – really fighting – against this virus.

Also travelling to and from abroad stopped – as in many other countries. There was a heated discussion about the fundamental rights of citizens – because according to our constitution every citizen has the right to leave the country as well as to come back home. There was also great concern about the COVID-19 epidemic in our neighbour countries: Estonia, Sweden and Russia.

All through this epidemic, our health care system has been under pressure and intensive care units and infection departments have worked hard. Doctors and nurses are rather tired but we have managed to take care of all the COVID-19 patients. Instead waiting times for surgery and diagnostics

have lengthened. Especially in primary care, we have problems as so many nurses, dentists and doctors have been transferred to do infection tracking or vaccination. Now we have a new word in Finnish: *HOITOVELKA*, which translates to *treatment debt*. So the concern is rising, if we are getting more health problems because of this overload/lock-down and mental, social problems get worse and diagnosis for serious diseases may be delayed.

At the moment it looks like the fourth wave of this pandemic is rising in Finland, so we are competing with vaccination against this virus.

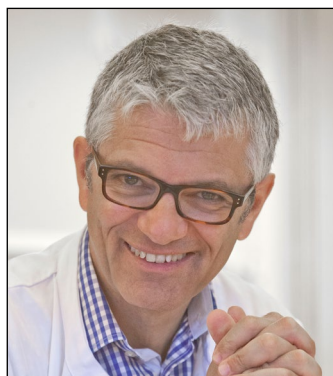
Lately, there has been activity in social media against vaccination and also a denial of the whole pandemic – different conspiracy theories like Qanon and unfortunately also campaigning in Instagram and TikTok to convince children not to take the vaccination. Also, some dissident physicians are spreading fake news and disinformation.

In Finnish Medical Association we are very proud of our members – how hard they have worked and also how rapidly scientists, medical researchers all over the world have been able to develop treatment and several vaccines against this virus. This truly proves the importance of international co-operation in medical research.

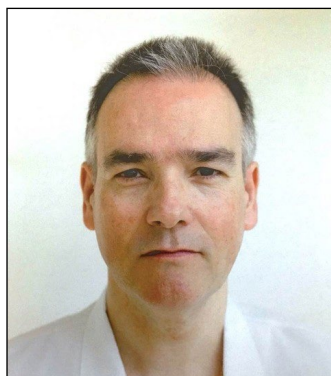
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Acute Medicine during the COVID-19 Pandemic in Switzerland



Manuel Battagay



Thierry Fumeaux



Nicolas J. Mueller



Hans Pargger

For more than a hundred years no world-wide pestilence has affected the world as much as the COVID-19 pandemic. More than 180 million people were infected worldwide and millions had to have cared for acute, severe COVID-19 disease. Official numbers document that close to 4 million people have died, and it is not yet over. Switzerland, like most other countries, has been much affected by COVID-19. Consequences for individuals, society and life in general since February 2020 have been enormous. This article highlights the main aspects and specificities of the acute medicine response in Switzerland during the COVID-19 pandemic.

As of June 2021, Switzerland has documented over 700'000 confirmed SARS-CoV-2-infections. Almost 30'000 patients with COVID-19 were hospitalised since February 2020 during the entire epidemic and 10'315 individuals have died from COVID-19. Switzerland has one of the most advanced healthcare systems worldwide. Over 150 acute care hospitals are distributed throughout the country, with five University Hospitals and 9 larger Cantonal Hospitals (> 500 beds) as the main pillars of acute medicine. Switzerland is built up by 26 Cantons corresponding to States in

other countries. In a normal situation, the health care system is mostly organized at the cantonal level, within the legal framework of federal laws and regulations. In addition, Switzerland is characterized by four language regions (German, French, Italian, Reto-romanic), with significant cultural differences.

Since February 2020, hospitalization numbers strongly reflected the epidemiological situation, with the typical delay of one to several weeks between an increase in population cases followed by hospital and intensive care admissions and deaths. Vice versa numbers of infected patients who had to be hospitalized decreased quickly after strengthening measures against the spread of the virus. Peak values were observed during the first wave on March 23rd 2020 with 1'321 new daily cases and in fall with peak values on November 2nd 2020 with 21'926 new daily cases especially in the French-speaking part of Switzerland. Hospitalisation numbers in particular in intensive care units were very high and at the very limit of hospital capacities, in particular in the French and Southern part of Switzerland during the first wave and in the German part of Switzerland during the second wave. At the peak of the 2nd wave, on November 16th 2020, 3'787 COVID-19 patients were

hospitalized, with over 900 ICU patients at this time.

Very rapidly early in 2020, many professional societies issued guidelines for the management of COVID-19 patients. This was particularly the case for the Swiss Societies of Intensive Medicine, Infectious Diseases and Internal Medicine, who contributed to the coordination of acute care, mostly with joint recommendations. Acute medicine benefited also from the ongoing collaboration with the Federal Office of Public Health regarding the procurement of medications as well as the analyses of the Swiss National COVID-19 Science Task Force regarding the development of the epidemic or the critical appraisal of new treatment strategies.

During the first wave, it became obvious that the coordination of available hospital and ICU beds across Switzerland was necessary to ensure balanced use of the acute health care system resources. Following this first wave, the national coordination system was adapted to become fully functional for the second wave. The coordinated health care service ('Koordinierter Sanitätsdienst', KSD), the Federal Office of Public Health, the Swiss Society for Intensive Care Medicine, the Hospital

Organisation (H+) and the Board of Directors of the cantonal ministers of health were able to collectively set up an organisational crisis platform and a live ongoing survey system with very detailed data on the hospital and ICU situation throughout Switzerland. Such data presented with dashboards included daily numbers of ICU occupancy (for COVID-19 and non-COVID-19 patients), numbers of hospitalizations on wards and free bed capacities. Based on this, a short-term prediction model was set up (www.icumonitoring.ch). Data were accessible also to the public and published in the news media on a daily basis. Based on this, the total number of available, staffed and functional ICU beds was increased from 865 to around 1100, in order to prevent deterioration of quality of care. Based on available resources in trained personal, material, machines and locations the hospitals were prepared to further increase this number to about 1400, but with decreasing staff density. In addition, intermediate care unit capacities were increased and normal wards were equipped and staffed to apply treatments such as high flow oxygen.

During the COVID-19 pandemic, the high quality of the Swiss acute medicine was preserved, notably due to the quality of the general practitioners and hospital networks. According to the ongoing survey data of the FOPH, hospital mortality has been one of the lowest in the international setting, i.e. between 10% and 14% in different hospitals throughout the country. Several factors, likely a combination thereof, could have led to this low hospital mortality:

1. Switzerland has a well-developed health care system with a dense network of primary care practitioners throughout the country and universal access to high-level healthcare. This is reflected by one of the highest life expectancies worldwide. In particular, the good level of care of patients presenting the risk factors for COVID-19, such as high blood pressure, diabetes and other car-

diovascular risk factors may play an important role.

2. The low hospital mortality in acute hospitals can in part be explained by the fact that many elderly and frail patients were not admitted to a hospital or intensive care unit. Death rates reached a new height in 2020 never seen since the 1940'. Indeed, in Switzerland, many elderly living either at home or in nursing homes were engaged in a shared decision-making process, and opted to stay at home or in a geriatric hospital without acute care or intensive care management. Importantly, there were no restrictions to the access to a hospital or ICU beds, so that there was no admission refusal at any time point, for any patients. A guideline for the ICU admission triage in case of limited resource availability was published already in March 2020, based mainly on short-term prognosis determined by co-morbidities and the addition of frailty in a revised version in November 2020 (https://www.samw.ch/dam/jcr:d0299ca3-c2be-49e8-9a55-e3c666dc3e7/guidelines_sams_triage_intensive_care_resource_scarcity_20200320.pdf). But this guideline had never to be implemented throughout Switzerland.
3. Third and most importantly, high-end medicine could be maintained in all hospitals which ensured high quality. Interdisciplinary collaboration with key teams contributing additionally to acute care included cardiology, pulmonary medicine, nephrology, radiology, microbiology, radiology, psychosomatics, in addition to intensive care, infectious disease, infection prevention and -control and internal medicine specialists. All this teamwork was essential for maintaining a functional system, together with an interprofessional work of physicians, nurses and supporting teams including hospital task forces to coordinate within the hospital but also with Cantonal authorities and primary care practitioners.

Despite the adaptation of the organization of the healthcare system, Switzerland's hospital- and ICU-bed capacity has almost reached its limits in November 2020. However, the level of quality of care seemed to be preserved throughout the whole pandemic, but this was at the cost of postponing non-emergent surgical interventions requiring postoperative intensive care. During the first and the second wave, there was also a clear decrease in the admission of patients presenting with acute stroke or myocardial infarction, and a lower than expected number of 'usual' ICU patients including trauma patients.

It became clear from this pandemic and epidemic in Switzerland that processes and coordination are the most important aspects. Trust building aspects were local and national guidelines of infection prevention and control within hospitals from the very beginning learning then already from the national and international experience. In this context, a humble view helped much to learn and to constantly optimize.

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A Report on a Symposium Titled ‘Violence Against Doctors with Focus on Women Doctors’ Presented at the Mwia Near East and Africa Conference, Abuja 2021



Dabota Yvonne Buowari

Introduction

Violence against healthcare workers including doctors is a global epidemic and it is unacceptable [1]. Workplace violence is violence that occurs at the workplace [2]. This includes physical and psychological abuse (emotional abuse), bullying, verbal abuse, sexual harassment and racial discrimination. The exact burden of this problem is not known but according to the World Health Organization between 8% and 38% of healthcare professionals have been victims of physical abuse in the course of their work [1]. This prompted the International Labour Office, International Council of Nurses, World Health Organization and Public Services International to launch a joint programme for the reduction and elimination of the impact of violence at the medical workplace [1].

Violence against doctors can occur on the way to work [3]. The consequences are direct and indirect effects; temporal or permanent

physical disability, death, low worker morale; increased job stress, turnover; hostile working environment, reduced confidence in hospital management and colleagues [2].

The perpetrators are doctors or patients and their families. Trainer – trainee bullying is common during residency training especially in settings where there are no policies against it or policies guarding interpersonal relations within the medical workplace. Significant incidents of workplace violence occur in the hospital because the emotion of patients and their caregivers are involved [4].

The Medical Women's International Association (MWIA) is an international association of women doctors globally, for easier support and governing is divided into various regions; the Near East and Africa is one of the regions, comprising of countries in the Near East and African continent. The Near East and Africa MWIA region organize a regional conference every three years.

In 2021, the MWIA Near East and African regional conference took place in Abuja, the Nigerian Capital City. It was a hybrid conference of physical and virtual participants due to the COVID-19 pandemic. The conference was earlier scheduled to take place in September 2020 but it was rescheduled due to the COVID-19 pandemic. There were different sessions at the conference which included plenary sessions, opening ceremony, panel symposium, oral and poster presentations.

The Violence against Doctors Panel Symposium

The panel symposium on violence against doctors with a focus on women doctors

was held at the MWIA Near East and Africa regional conference. The host for this symposium was Dr. Dabota Yvonne Buowari. The Chair of the symposium was Prof. Elizabeth Ogoli Nwasor, a Chief Consultant Obstetric Anaesthetist, Critical Care and Pain management at the Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State, Nigeria. This symposium was attended by 66 physical and 33 online conference attendees from four countries: Nigeria, Tanzania, Ghana, and Germany.

The Panelists

There were three speakers at the panel symposium: Dr. Ogugua Osi-Ogbu, a geriatrician; Dr. Margaret Owoliyi Popoola, an Orthopaedic surgeon in training; and Dr. Dabota Yvonne Buowari.

Brief Report on Individual Contributions

The topics discussed by the panellists are:

Panelists	Topics
Dr. Dabota Yvonne Buowari	Workplace violence in healthcare
Dr. Margaret Owoliyi Popoola	Violence against female doctors, a growing trend
Dr. Ogugua Osi-Ogbu	The role of chief executives in the prevention of violence at the medical workplace

Workplace Violence in Healthcare

The definition of violence according to World Health Organization was given as violence in the workplace. According to the World Health Organization, the workplace should be free from any form of violence and harassment. When friction, conflicts and grievances occur, they should be resolved amicably. The International Labour Office, International Council of Nurses, World Health Organization and Public Services International launched a joint programme for the reduction and elimination of the impact of violence at the medical workplace in 2003 (5). In 2016, Nigeria proposed Resolution 5 at the MWIA triennial conference in Vienna, Austria "Whereas patient-initiated violence against health workers has serious health effects on the health workers and the community. MWIA resolves that health workers are entitled to work free from occupational stress and threat in a safe environment free from harassment, discrimination, violence, verbal and physical abuse [6]. At the workplace, violence can occur between healthcare workers and patients, healthcare workers and patient's relatives/caregivers, between healthcare co-workers. In as much as any physician can be assaulted at the workplace, emergency physicians, psychiatrists and primary care physicians are at risk of being assaulted while caring for their patients. Violence at the medical workplace can take various forms; verbal, psychological, physical abuse and sexual harassment.

The causes of violence against health workers as:

- Individual, organization and environmental factors.
- Patient-related, physician-related and healthcare institution related factors.

Some of the risk factors that predispose doctors to be assaulted by patients and their caregivers are female health workers and young doctors. Violence at the workplace

in healthcare is a global problem; therefore women doctors who have been assaulted needs support especially mental health support. It is necessary to conduct studies on workplace bullying and sexual harassment especially as the International Labour Office (ILO), International Council of Nurses (ICN), World Health Organization (WHO) and Public Service International (PSI) jointly developed a reliable and validated research instrument "The workplace violence in the health sector research instruments for quantitative research and guidelines for focus group discussion through the joint programme on workplace violence in the health sector. This will enable various countries to provide a solution to this problem.

Workplace Violence against Female Doctors, A Growing Trend

The female sex is a risk factor for been assaulted at the medical workplace. Women doctors face a lot of challenges in the course of their work. It is important various strategies are taken to end this menace. Violence against women is one of the oldest global public health issues and by extension to women doctors.

Generally, receivers of psychological violence are also likely to be victims of physical violence. Though many cases tend not to be reported especially in developing countries, women doctors compared to their male counterparts are at a high risk of psychological violence which is perpetrated by their patients, caregivers, male colleagues, senior colleagues and visitors to the hospitals. She gave the United Nations declaration on the elimination of violence against women (1993) states that "as violence against women is any act of gender-based violence that results in or is likely to result in physical, sexual or mental harm or suffering to women including threats of

acts, coercion or arbitrary, deprivation of liberty, whether occurring in the public or private life. Doctors especially women doctors encounter several forms of violence at work making women doctors not to be safe at work. The emergency units and psychiatry are known to be hotspots for violence against health workers. Violence against women doctors has impacts on the carrier, finances, health institutions, economy and the society at large. On the way forward, the responsibilities of doctors, health institutions, the media and the government was given. The annual 16 days of activism against violence against women should also be used as a campaign on violence against women doctors. There is a rising rate of violence against doctors and not necessarily women doctors is increasing leading to reluctance to take up challenging cases, thereby comprising healthcare delivery. There is therefore an urgent need to make health care facilities safe havens for doctors as only then can they work with complete dedication.

The Role of Chief Executives in the Prevention of Violence at the Medical Workplace

Some of the preventive strategies of violence at the medical workplace include the provision of protection and security. Also, health workers should be trained on good communications, show empathy to their patients and also leave the scene once they sense any form of psychological abuse to avoid its progression into a physical assault.

The topic of violence against healthcare workers is apt at this time of the COVID-19 pandemic. Most of the cases have been underreported and much attention has not been given to this issue. Sometimes healthcare workers are beaten by patients and their caregivers outside the hospital premises on their way home after the close of work.

Conclusion

Participants who are chief executives of hospitals were urged to put measures in place to protect women doctors from every form of workplace violence. Conducting studies on workplace bullying and violence against doctors is necessary to determine the actual burden of the problem.

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The COVID-19 Pandemic Revealed the Need for Increased National Governance of Healthcare in Sweden



Sofia Rydgren Stale

The governance of healthcare in Sweden

In Sweden, the state, regions and municipalities share the legal responsibility for healthcare. The state has overall responsibility for the healthcare system and the state sets the requirements through legislation on which care is to be provided and the framework for

its organisation. Governmental authorities are responsible for issuing binding guidelines, exercise supervision and coordinate healthcare. The state also decides which care is to be considered national highly specialized care. The state has the primary responsibility for research and education in the field of healthcare through state universities. Finally, the state contributes significant funding of healthcare through both general and targeted governmental grants.

The provision of health care is the responsibility of 21 regions and 290 municipalities. They are obliged under the Health and Medical Services Act to offer health and medical care, which means that it is a mandatory task imposed by the state on municipalities and regions [1]. The law also describes the obligation for the municipalities and regions to cooperate on the care of the elderly both at the overall and individual levels. However, the law gives great freedom to the regions and municipalities to decide how to provide healthcare according to local and regional conditions and needs. This is called local self-government. Self-government is exercised by decision-making

assemblies representing the local population. At the same time, the main objective of the Health and Medical Services Act is clear – healthcare must be equal throughout the country.

Each healthcare region decides what kind of healthcare is to be performed and where, for example at which hospitals. Each region also decides on investments in hospitals and other care facilities, as well as investments in medical technology and other equipment. All of Sweden's municipalities and regions are members of the SALAR (The Swedish Association of Local Authorities and Regions) which is both an employers' organisation and an organisation that represents and advocates for local government in Sweden. It is a politically controlled organisation with a board consisting of elected representatives from municipalities and regions [2].

Various difficulties with the current Swedish governance model

For a long time, the Swedish model for healthcare with the division of responsibili-

ties between the state, region and municipality, has struggled with various difficulties. Several governmental investigations have tried to solve the problems by putting forward proposals for a more optimal division of responsibilities. But nothing has happened that has fundamentally reformed the division of responsibilities. For healthcare, the situation is problematic in many ways and a large part of these problems can be referred to the healthcare regions being unable to deliver equal healthcare.

Based on the principle of subsidiarity, the majority of the welfare sector's commitments rest on local self-government. In this way, citizens are able to more easily influence priorities and strategies and, in the best of worlds, learn from each other's mistakes. The principle of proximity and the principle of learning from each other (institutional learning) are traditionally two strong arguments that in theory support the Swedish regional self-government. But what in theory is a strength, turns out to be a disadvantage in practice in the case of Swedish governance of healthcare. For example, the length of the waiting list for surgery or the availability of primary care is often determined by the prioritisations made by the regional politicians. Regional elections every four years may not be enough as an instrument to shorten the waiting list for hip surgery or to get access to the same doctor at each visit at the primary care. The regions' exchange of experiences, which in Sweden takes place through national clinical knowledge management, does not seem to bring Sweden any closer to the goal of the entire population having equal healthcare.

The healthcare regions face major challenges in the coming years. The rapid development of new advanced treatment methods and drugs in recent decades will not slow down. On the contrary, the demands on expensive investments in medical technology equipment, new effective medicines and appropriate premises will continue to increase.

In addition, the need to train and recruit staff with the skills to use the new high-tech equipment and to perform new advanced operations and treatments is increasing.

An average Swedish region, except for the metropolitan regions, has approximately 260,000 inhabitants. These sparsely populated regions are expected to maintain the same accessibility and quality of care as Stockholm, the capital region with more than 2 million inhabitants. This is very difficult today and will be even more difficult in the future, considering the fact that urbanisation does not seem to diminish. Many regions are simply too small to cope with the heavy investments that are necessary to be able to provide healthcare in a rational, equal and patient-safe manner.

The difficulty of recruiting staff with the right skills and getting the staff to stay and be content with their work environment is also an escalating problem and a challenge for the future in all parts of the country. Another key issue for the healthcare of the future concerns the conditions for research and innovation. Today's model with 21 regions does not facilitate research and innovation in Sweden. The collaboration between healthcare, universities and the industry needs to be strengthened.

In addition, it is not efficient to carry out digital development in 21 different ways. The fact that all Swedish regions have procured different medical record systems does not facilitate the management of healthcare.

The COVID-19 pandemic revealed inequality in healthcare

The COVID-19 pandemic has exposed several of the shortcomings in the current Swedish model of healthcare governance, including insufficient regional emergency stocks, the slow start of testing and weaknesses in the care for the elderly in elderly

homes. After the vaccinations started, the vaccination rate has shown to vary greatly between regions.

Structural deficiencies in the care for the elderly

According to the principle of liability, the person responsible for activity in normal situations has a corresponding operational responsibility in the event of a crisis. It is a simple principle in theory, but the more people that share the responsibility, the more difficult it will be to make the entire system work well in practice. In Sweden, the responsibility for healthcare and other care of the elderly is divided between the regions and municipalities. In many regions and municipalities, there are also a large number of private care providers.

As early as 2017, the governmental investigation "National quality plan for care for the elderly" [3] reported several shortcomings in how the care was organized for the elderly suffering from multiple diagnoses, reduced mobility and a failing social network. It was stated that there was a lack of interaction between inpatient care and primary care as well as between primary care and elderly care, and nobody had overall responsibility.

In June 2020, the government decided to appoint a Corona Commission with the task of evaluating the measures taken by the government, the administrative authorities, regions and municipalities to limit the spread of COVID-19 [4]. The Corona Commission's conclusions showed that almost 90 % of the more than 7,500 of those who died in Sweden up to the beginning of December 2020, were 70 years and older, almost half of them lived in nursing homes (see Figure 1). The Commission's overall assessment stated that, in addition to the general spread of infection in society, the greatest impact on the number of infected and deceased due to COVID-19 within

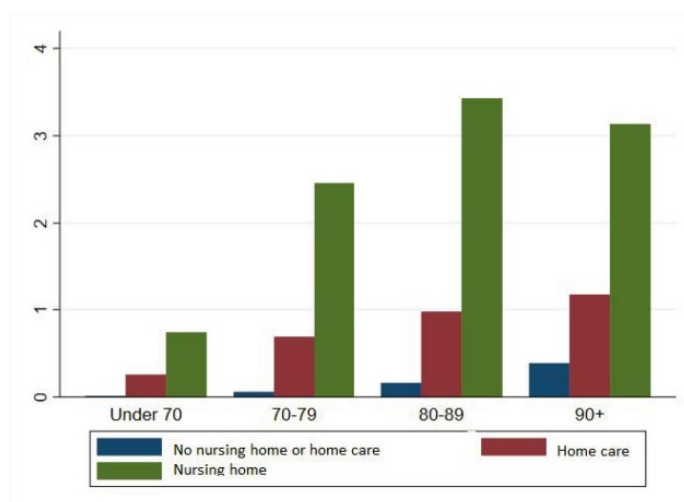


Figure 1. Proportion (percent) of deaths with Covid-19 per age group and form of elderly care

Source: Äldreomsorgen under pandemin (The elderly care during the pandemic). 7 December 2020.

Official state investigation. Available in Swedish at:

https://www.regeringen.se/4af379/contentassets/a8c708ff5e84279bf11adb0f78fcc1/sou_2020_80_aldreomsorgen-under-pandemin.pdf

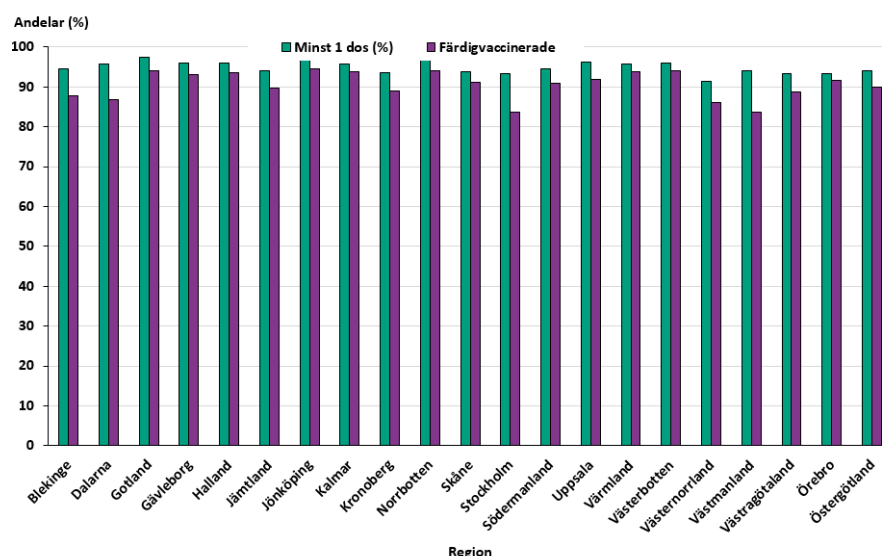


Figure 2. Vaccination coverage (%) among people who are 65 years and older and who live at nursing homes, in 21 different healthcare regions on the 26 May 2021. Green = 1 dose of vaccine, violet = 2 doses of vaccine

Source: The Public Health Agency of Sweden. Available in Swedish at:

<https://www.folkhalsomyndigheten.se/folkhalsorapportering-statistik/statistikdatabaser-och-visualisering/vaccinations-statistik/statistik-for-vaccination-mot-covid-19/uppfoljning-av-vaccination/vaccinationstackning-i-prioriterade-grupper/>

the Swedish elderly, was the well-known structural weaknesses. These weaknesses made the elderly care unprepared and ill-equipped to deal with a pandemic.

Differences in vaccination rate

Several Swedish government agencies have been responsible for different areas during the COVID-19 pandemic. The Swedish Medical Products Agency is responsible for making decisions on the approval of vaccines for COVID-19 but it is the Swedish Public Health Agency who is responsible for recommendations regarding which groups of the population should be vaccinated, and in which vaccination phase and also distributing the vaccines to the regions. This distribution to the regions was initially based on the proportion of elderly people living in the different regions. As later phases of the vaccinations for younger people started, other factors controlled the distribution.

The healthcare services in the 21 regions in Sweden are responsible for carrying out all vaccinations. The COVID-19 vaccinations in the regions should have been conducted in accordance with the Swedish Public Health Agency's recommendations [5]. The regions had, however, different interpretations on who should be vaccinated in which phase. For instance, individuals with a higher risk of COVID-19 should according to the recommendations have been vaccinated in an earlier phase than their age suggests. However, one of the largest regions in Sweden decided to deviate from this recommendation as they claimed it would be administratively too demanding [6]. After massive criticism, the region backtracked their decision, but this kind of back-and-forth information made public guidance and compliance to vaccinations more difficult.

Due to these kinds of alternate priorities, the last and final phase of the vaccinations,

ages 18-60, did not start at the same time in the different healthcare regions. In addition, the way the vaccinations could be booked also differed between the regions (e.g. booking app, phone, notice by mail). Thus, the vaccination coverage differs across the country (see Figure 2).

Swedish healthcare needs reforms

As previously mentioned, the problems of inequality in healthcare have existed in Sweden long before the pandemic: long waiting lists for treatment, poor accessibility and poor continuity between the doctor and patient. A recently published governmental investigation "Increased conditions for sustainable investment projects in the healthcare of the future" states that the pandemic has only clarified the problem that the different parts of Swedish healthcare infrastructure are not connected.

For example, an ICU bed does not mean the same thing in all hospitals [7]. When an ICU patient needs to be moved in a critical phase, the situation may arise that part of the care included in an ICU bed at one hospital is not included at another hospital. These differences also make it more difficult to borrow staff between hospitals in crisis situations. The hospital buildings also look different, different wards are located differently in relation to each other, medical equipment is of different brands, has different capacities and is not compatible. These differences were not created deliberately but unfortunately, they were not acknowledged by the hospitals until the pandemic revealed them.

Today, approximately 120,000 patients are on the waiting list for surgery in Sweden. Half of them have waited over 90 days (more than the national "care guarantee" allows). For many, the waiting time is much longer. In Denmark, this problem does not

exist at all, due to governmental control, economic incentives and significantly fewer regions. Danish patients almost always receive care at "their own hospital" within 30 days.

The Swedish people expect that the healthcare of the future will function equally regardless of geographical and administrative boundaries. In a recent survey commissioned by the Swedish Medical Association [8], 64 percent of the public respondents answered that instead of the regions, the state should be responsible for healthcare. The Swedes think that today's healthcare system works poorly. With increased state governance, it is possible to get national coordination of the waiting lists and in this way offer patients treatment more quickly in another part of Sweden than in their "own region". In the event of extreme situations, such as the pandemic, some of the healthcare staff could also be relocated according to the national needs.

The Swedish Medical Association calls on joint tax-financed healthcare with a variety of different kinds of care providers. Private doctors and privately run units can also help to shorten the waiting list of the postponed care. But it must be the state and the state authorities that have overall responsibility for the governance of healthcare. The healthcare regions and their umbrella organisation SALAR have developed almost into a government agency with a lot of power, even though the SALAR should only be an employer and lobby organisation for the municipalities and regions.

To increase national governance, The Swedish Medical Association has developed a comprehensive 29-point action program in the wake of the pandemic. We believe that improved governmental control will even out the regional differences in healthcare and provide equally good care for the entire population, regardless of where in the country one lives!

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COVID-19 and War-Related Stress and Somatized Mental Health Disorders Among General Population. Armenian Experience



Samvel Sukiasyan



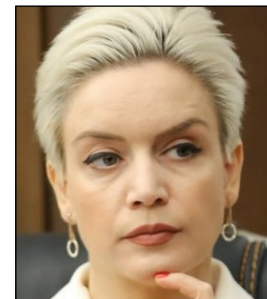
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COVID-19 pandemic related lockdown in Armenia started in March 2020. The on-line survey was conducted on social platforms among the general population in May-June 2020 to identify stress levels and somatic expressions of mental health disorders. The survey indicates moderate and severe stress levels to be 40% and symptoms of psychosomatic origin to be 20% among the survey population. On September 27, 2020, Azerbaijan started a war in Nagorno-Karabakh (Republic of Artsakh). After the signed ceasefire agreement new survey was initiated and the preliminary analyses of the results showed a highly increased level of stress and psychosomatic manifestations.

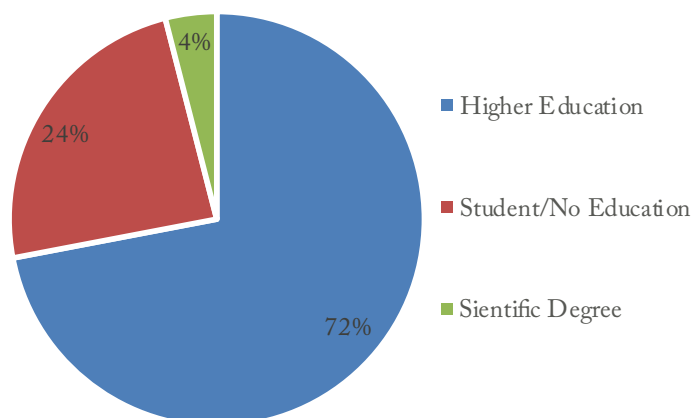
The World Association for Social Psychiatry [1] defines the COVID-19 pandemic as “one of the most significant events since the Second World War”, which affected most countries in the world, regardless of their “human development index”, which caused great social upheavals, an economic crisis and a host of social, psychological and health problems. One of the consequences of the pandemic was stress among the general public. Stress has become the content of the life of a modern person. Due to periodically recurring infections, wars and other disasters since the beginning of the 21st century, the escalation of the epidemic of

COVID-19 infection into a pandemic and the accompanying socio-political upheavals, stress is increasingly becoming destructive in nature, causing serious problems in the personal, social, somatic and psychological existences of a person [2]. Not only the COVID-19 related changes in social life, such as lockdown and other restrictions were found to be the stress factors for the general public, but also the virus itself found to have an impact on the mental health of the infected. COVID-19 is a rather multifaceted, multi-local disease, with far from clear dynamics and features; the causative agent of the disease (SARS-CoV-2 Coronavirus) can infect the brain, trigger immune responses, disrupt blood clotting, cause thrombosis of small vessels, further adversely affecting the brain function and mental health of patients [3]. A whole series of works over the past less than a year has been devoted to mental health problems caused by Coronavirus infection [4, 5, 6, 7, 8]. In a study conducted in China among the population, more than half of the respondents reported moderate to the severe psychological impact. In the same study 16.5% and 28.8%, respectively, reported moderately severe depressive and anxiety symptoms [6]. The situation in Armenia was worsened by the Nagorno Karabakh conflict excavation and 44-day war that took lots of lives and had a huge impact on the mental health of Arme-

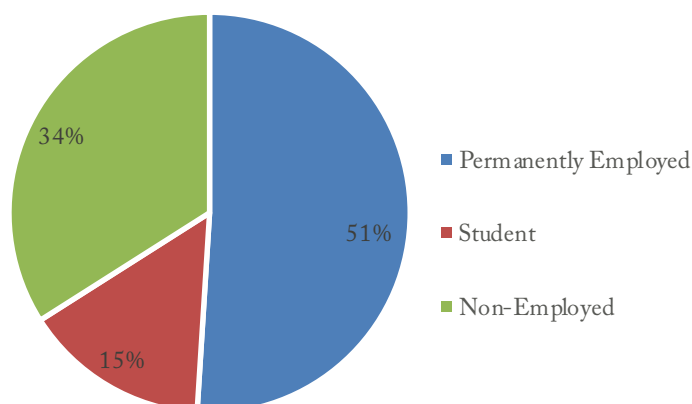
nia and the Nagorno Karabakh population. This study aimed to identify the stress level and somatization level of mental health disorders of the Armenia population during the COVID-19 pandemic and Armenian-Azerbaijani war.

Taking into account the situation of strict lockdown in the country it was not possible to survey people, thus the online platforms, namely through the Facebook social network was used for online survey. The on-line survey platform was designed consisting of several blocks: a socio-demographic block, standardized questionnaires to assess the mental state of the population and the level of stress severity. The PSM-25 Psychological Stress Scale [10] and questionnaires for detection of asthenia, depression, hypochondria, somatization [9,11] were translated, pretested with back-translation. The participation was anonymous, on a voluntary basis. The survey could be interrupted at any time. The sample size with a confidence error of 95% and a margin of error of 5% was estimated to be 1,066.2. The first phase of the survey was conducted from May 12 to July 24, 2020. The second phase was initiated in November 2020 and is continued till now (June 2021) to reach the necessary sample size. The data were processed and analysed by the IBM SPSS Statistics v.23.0

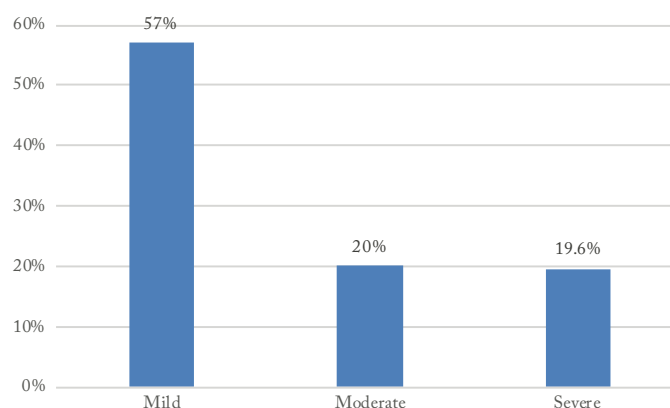
1076 respondents took place in the survey. Among the survey participants, both men (509 or 47.3%) and women (487 or 45.3%) were approximately equally represented. 79 respondents (7.3%) did not indicate their gender. The age of the respondents varied within a fairly wide range – from 18 to 75 years, with the majority being between 18 and 40 years old (921 participants- 85.7%). The marital status of the participants was calculated to 487 married (45%) and there were 471 unmarried participants (44%), and in general 588 people were single for the period of the survey (54.7%). The surveyed sample was characterized by a high level of education and employment. 779 people had higher education (72%), 45 people mentioned post-graduate education/scientific degree (4%) (see Graphic 1). 547 participants had permanent employment (50.9%) and another 160 people (14.9%) introduced themselves as college and university students (see Graphic 2). Thus, 707 people (65.8%) had a permanent and main occupation. According to the PSM-25 Psychological Stress Scale, the respondents were found to have mild, moderate and severe psychological stress: 613 (57.0%), 215 (20.0%) and 210 people (19.6%) respectively (see Graphic 3). Overall, 40% of the survey population identified to have moderate to severe levels of stress. The scale was ignored by 37 respondents (3.4%). It is interesting to note that the most stress-resistant were students and people with permanent employment. Together they made up 65.8% (707 people) of the surveyed population. The other factor contributing to the severe stress reactions is the presence of chronic disease. Among people with chronic somatic diseases (146 people, 13.6%), symptoms of severe stress were found among 27.4% of the respondents (40 people); in the group of somatically healthy people (929 people, 86.4%), only 18% (168 people) of respondents found symptoms of severe stress (see Graphic 4). Regardless of the severity of stress, the questioned population had symptoms of asthenic (489 people, 45.5%), depressive



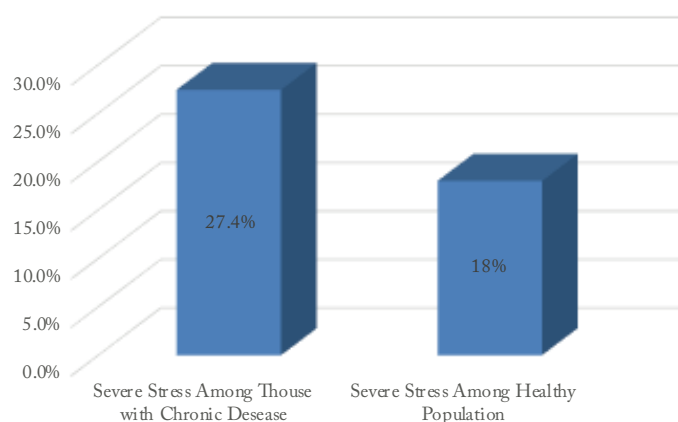
Graphic 1. Education of study population



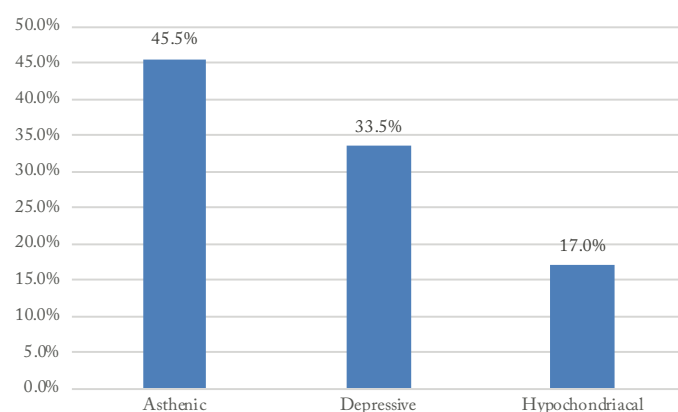
Graphic 2. Employment status of study population



Graphic 3. Stress levels of study population



Graphic 4. Stress level and somatic disorders



Graphic 5. Distribution of somatized mental health disorders

(361 people, 33.5%) and hypochondriacal (183 people, 17%) disorders (see Graphic 5). In general, the somatization on all three scales was identified among 268 respondents (24.9%). In the second phase of the survey, which was conducted after the Armenian- Azerbaijan war 2020, the preliminary data analyses showed that moderate and severe stress levels increased up to 60%. The data is not finalized, but even preliminary analysis shows that war added on COVID-19 related stress level and almost doubled stress level.

The extensive data was subjected to statistical processing to understand all possible

and impossible connections, correlations, dependencies between different types, levels, and severity of stress factors and other parameters, such as demographic and other features of the survey population. We hypothesised that possible psychopathological phenomena may be due to the severity of stress factors, personality characteristics of the respondents, and some socio-demographic parameters. The development of stress occurs under the influence of both external environmental factors and individual psychological and socio-demographic characteristics of the personality. Each individual functions quite specifically (despite a number of

general, universal mechanisms) in a stressful situation due to personal peculiarities, characteristics of the situation, the severity of the trauma, its duration and intensity, etc. The following significant relationships were identified. To study the role and place of demographic parameters in this study, the T-Student method was used to implement group comparisons and the method of more than two-group comparisons (One-way Anova). Gender characteristics of the response to extraordinary stressful influences in this study showed significant differences. Statistical analysis of the data identified that men and women show differences in the level of stress and hypochondria ($t(1985.4) = -2.094$; $p_1 = 0.037$; $t_2(987) = 2.33$; $p_2 = 0.02$). Women have a higher level of stress ($M = 92.41$; $SD = 39.175$) and a low level of hypochondria ($M = 3.39$; $SD = 2.974$). The development of asthenia, depressive and hypochondriacal manifestations (somatization) was related to a number of socio-demographic factors: education, social activity, disability, etc. Individuals with higher education ($M = 4.9$; $SD = 3.659$) found the lowest rate of depression, and the highest rate was found in people with secondary education ($M = 5.87$, $SD = 3.697$) and below ($F(4, 1041) = 2, 49$; $p = 0.042$). A similar pattern was revealed with respect to hypochondria – persons with higher education showed the lowest level of hypochondria ($F(4, 1041) = 3.633$; $p = 0.006$). The high level of education of the population contributes to an increase in stress resistance to traumatic effects, which contributes to lower rates of depression and hypochondria. The socially active group of respondents (students, working respondents) was least of all prone to somatic manifestations of mental health disorders. They had the lowest rates of asthenia, depression and hypochondria, while among pensioners, unemployed and unemployed these indicators were the highest. Thus, a low level of depression ($M = 4.66$; $SD = 3.601$) and hypochondria ($M = 3.35$; $SD = 2.873$), as well as asthenia ($M = 5.6$; $SD = 3.407$)

were detected in individuals with high social activity ($F_1 (5.1036) = 6.774$, $p = 0.000...$; $F_2 (5.1036) = 8.379$, $p = 0.000$; $F_3 (5.1036) = 5.098$, $p = 0.000$, respectively for depression, hypochondria and asthenia). And low rates were found by pensioners and unemployed. Correlation that there is a pronounced positive relationship between the severity of stress and clinical manifestations of asthenia ($r = 0.676^{**}$, $p = 0.000...$), depression ($r = 0.632^{**}$, $p = 0.000...$) and hypochondria ($r = 0.387^{**}$, $p = 0.000...$). The important observation that needs to be proved by statistical analysis is that a combination of the stress factors, such as the COVID-19 pandemic and war consequences could multiply the stress level of the general population.

The results of the study indicated that in a "non-clinical", conditionally healthy population individuals are identified to express clinical signs of a neurotic level, both at the symptomatic and syndromic levels. The frequency of their detection under conditions of ongoing quarantine (possibly also in other emergencies) will tend to increase, which is confirmed by the patterns of development we have identified. The real and probable possibility of a worsening epidemiological situation, like any other emergency, fraught with an increase in the level of stress, puts mental health problems at the level of national security problems, requiring a state approach to solving these problems with the wide involvement of professional and nongovernmental organizations.

Based on our research and taking into account world experience, we consider it necessary to organize the following activities:

- To organize units for the provision of direct and remote psychological, psychotherapeutic and psychiatric assistance.
- To organization psychiatric care and psychosocial recovery services at general somatic hospitals and in primary health care.
- To organize emergency psychological and psychiatric intervention groups, consist-

ing of psychiatrists, experts in psychological interventions, social workers.

- To the creation of 24/7 psychological assistance hotlines.
- To establishment centres for an online survey of the population to collect information on the state of mental health and make recommendations on this basis.

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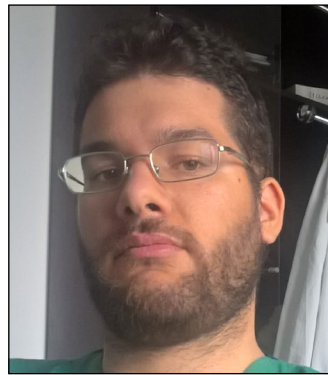
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Beyond the Number, Balancing Epidemiological Reporting with the Need for Patient Empathy During the COVID-19 Pandemic



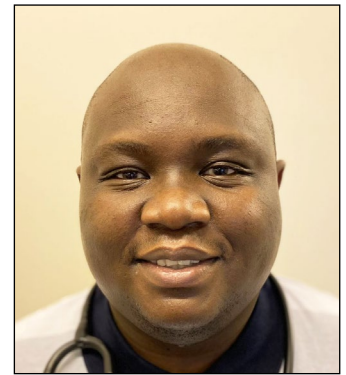
Dabota Yvonne Buowari



Francesco Rosiello



Damilola Ayowole



Lwando Maki

Overview of Pandemics

A substantial number of pandemics and communicable disease epidemics that have occurred were caused by novel strains of viruses. [1] By 2020, three of these epidemics have been caused by the novel strains of beta coronaviruses and present like influenza, the Severe Acute Respiratory Syndrome coronavirus (SARS-CoV), the Middle East Respiratory Syndrome (MERS) and the Severe Acute Respiratory Syndrome coronavirus-2 (SARS-CoV-2) [2].

SARS-CoV-2 (COVID-19) is a coronavirus that caused an outbreak in December 2019 in Wuhan, in the Hubei Province of China; the disease progressively spread and was declared a pandemic by the World Health Organization in March 2020. [3-6] COVID-19 transmission occurs through the contact or virus particles, from an infectious host to the mucous membrane of an individual at risk [7-10].

Epidemiological Reporting During Pandemics

Epidemiological reporting (ER) is an important tool in public health especially

during any community health outbreaks such as epidemics and pandemics. Epidemiological reports are essential instruments for the rapid and accurate dissemination of epidemiological information on cases and disease outbreaks including other communicable diseases of public health importance with emerging and re-emerging infections inclusive [11]. An epidemiological report contains information drawn from surveillance of a disease condition; this is because it provides an overview of the epidemiology of a disease of public health importance [12]. The systematic collection, collation and analysis of data with its dissemination to those who are in a position to take action is known as surveillance; Surveillance is important in the practice of public health [13, 14, 16].

It is necessary as it provides information about a disease according to person, time and place [17]. Reporting of surveillance is important for the development of strategies that address some specific health conditions [18].

Epidemiological reports aids in real-time planning, provision and evaluation of health care services during pandemics [19]. The

COVID-19 pandemic has had many epidemiological reports from different countries since the beginning of the pandemic with the country releasing reports. Each country decides if its agency is authorized to develop and to release such reports deciding on the frequency at which the reports are released [20]. There are challenges globally in the capacity for health institutions to produce Epidemiological Reports consistently and accurately [20]. Literature has found that Low- and Middle- Income countries predominately having the most challenges than higher-income countries [21]. Epidemiological data are necessary to provide interventional strategies for the coronavirus disease outbreak [22].

Empathy during Pandemics with Focus on Epidemiological Reporting

Empathy is an umbrella term that captures the range of responses of an individual to another individual's experience or an individual's ability to show concern to the feeling of others [23]. Undoubtedly, empathy remains critical to the quality of patient

care, but the well-being of healthcare professionals cannot be neglected in the process too [24, 25].

Literature has found that the empathy attribute of health professionals becomes tried and sometimes be lacking in pandemic circumstances [28, 29]. Even though individual choices are legally limited during epidemics and pandemics; it is also important to ensure that human dignity is not eroded.

Empathy and Epidemiological Reporting In COVID-19

The global emergence of SARS-CoV-2 infection has led to the strengthening of the capacity and organization of public health institutions in rolling out daily statistical data [30]. However, ER doesn't have any empathetic component to assist in the planning of actions to address pandemics; the literature has shown direct or indirect negative effects of epidemiological reporting and subsequent measures [30, 31, 32, 33, 34]. Indirect consequences of ER on patient empathy could stem from strict adherence to COVID-19 control measures and its negative effect on mental health. For instance, patients might get relatively limited empathy as a result of healthcare professionals over-reliance on Telemedicine in response to ER guidance or healthcare professionals fear invasive medical procedures due to misinterpreting ER guidance [35]. ER has been found to have led to the isolation of the elderly from their support systems which could have negative outcomes related to physical injuries or mental health conditions such as depression [36, 37].

There is a need for ER to have a component that addresses empathy in its reporting. This component will hopefully address the inclusion of empathy in the plans or activities of governments, institutions and healthcare professionals utilize to address health challenges.

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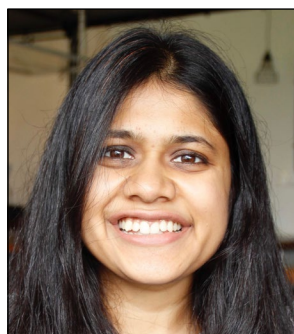
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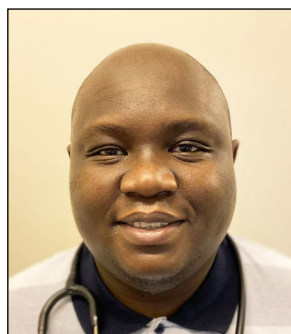
The Impact of COVID-19 Pandemic on Hospital-Based Health Services



Shiv Joshi



Rujvee Patel



Lwando Maki

A health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health [1]. This includes efforts to influence determinants of health as well as more direct health-improving activities [1]. Hospital-

based services (HBS) are a vital component to a health system: they are an important endpoint in a health systems patient referral pathway and play a key role in supporting primary level health services [2]. Globally, HBS are a limited resource and the lower-

income countries tend to have greater challenges in HBS resource availability than the high-income countries [3]. There are on average only 113 hospital beds per 100,000 inhabitants in low-income countries less than half the number in other developing countries and around 80% below high-income countries [3]. The difficulty for countries to achieve their HBS goals was further compounded on the 11th March 2020 when WHO declared that COVID-19 can be categorized as a pandemic [4].

Impact of COVID-19 on hospital-based services

COVID-19 has posed serious challenges to health systems globally HBS being impact-

ed [3]. Low-income, as well as high-income countries, are struggling to mitigate this outbreak and to efficiently manage and employ health resources [3, 5]. The pandemic resulted in countries needing to alter their HBS with prioritization of services being reviewed; the result of the review was not the same for all countries and we shall look at the impact it had on HBS [6–9]. The number of ICU beds, ventilation devices, hospital admissions, and ICU admissions per day due to COVID-19 is found to be the important predictors of mortality in the USA, Italy, Spain, and Germany [10]. An urgent need to expand hospitals' infrastructure and services and increase the production of devices used to treat patients with COVID-19 was emphasized [10].

COVID-19 resulted in countries mainly categorizing health services into essential and non-essential health services [5]. Across the five WHO regions, 66% of responding countries had defined essential health services to be maintained during the COVID-19 pandemic through a national policy or document [5]. However, almost 90% of the countries experienced disruption of these services to some extent, with greater disruptions being reported in low-and-middle-income countries as compared to the high-income countries [5]. Figure 1 illustrates that low to low-middle income countries had more disruption of service [5]. It was also found that the Eastern Mediterranean Region was the most affected, followed by the African and the South-East Asia Regions while the services in the countries in the European and the Western Pacific Regions were the least affected [5].

The most frequently disrupted services included: routine immunization services – outreach services (70%) and facility-based services (61%), non-communicable disease diagnosis and treatment (69%), family planning and contraception (68%), treatment for mental health disorders (61%), antenatal care (56%) and cancer diagnosis and treatment (55%) [5].

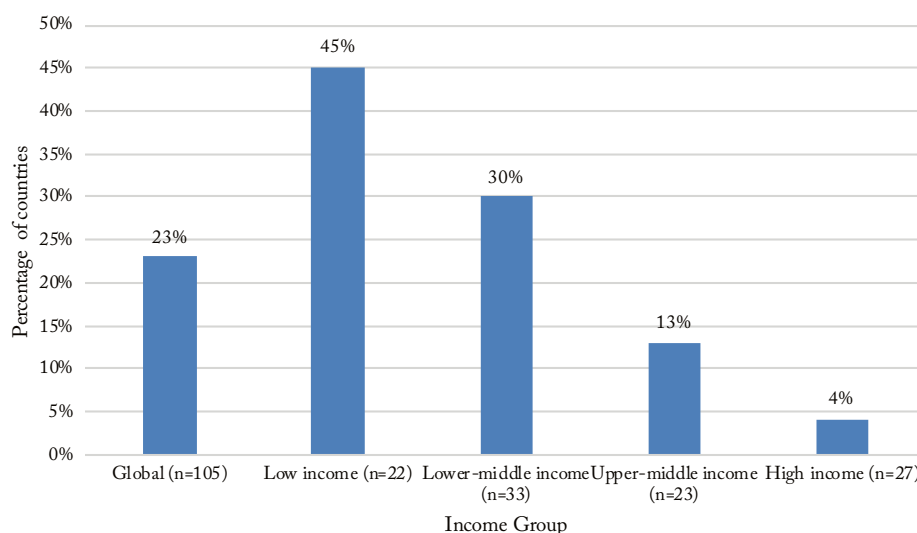


Figure 1. Percentage of countries reporting at least partial disruption in at least 75% of essential services (n=105) [5]

Literature has found that there is a major burden of cancelled elective surgery due to the COVID-19 pandemic; there is a risk that delayed treatment can result in disease progression that can cause the patient significant disability, poor quality of life and possible death [11]. Stratified by specialty and indication (surgery for cancer versus benign disease) The delay in treatment also has a significant impact on HBS as disease progression/complication can impact budget expenditures due to longer patient hospital stays and frequent use of HBS [12, 13].

Further, the role of political leaders and healthcare officials in ensuring that minimum resources are safely provided, including staff, hospital beds, and ICU is important [10].

The pandemic is an extraordinary situation that can affect parts of the world differently. The hospitals need to employ context-specific resource allocation strategies in order to cope up with the urgent demand for healthcare services which should essentially lie within the constructs of the core ethical principles of autonomy, beneficence, non-maleficence and justice. The effect of such

strategies can have long term implications in terms of strengthening of the health system.

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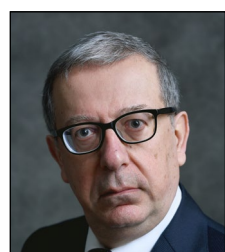
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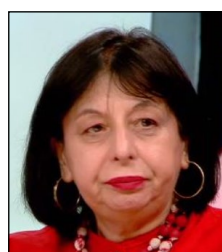
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Covid-19 Infection and the Vaccination Process in Albania



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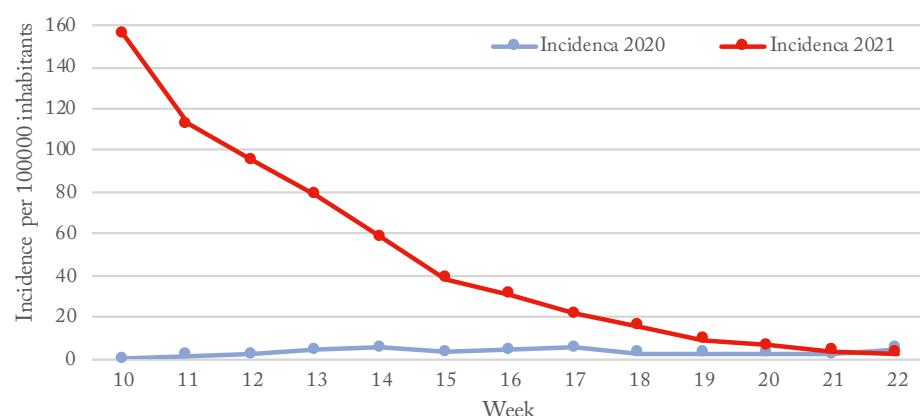


Figure 1.2. Incidence of confirmed cases COVID-19 by weeks for the years 2020-2021

In the context of the Sars Cov2 Pandemic, Albania had a total number of cases of 134746 [1], confirmed during the 65 weeks of the pandemic. Until June 6th 2021, the incidence of COVID-19 disease in Albania was 4707.4 cases per 100000 inhabitants and the mortality was 85.6 deaths per 100000 inhabitants [2]. The first case of Covid 19 was diagnosed on March 8th 2020. The vaccination process started on January 11th 2021 and continues at an accelerated rate throughout the target population. The vaccines used were Comirnaty-Pfizer-BioNTech, Coronavac-Sinovac, Vaxzevria-Astrazeneca, Covishield-Astrazeneca and Gam-Covid-vac, Gamaleya. No significant side effects were observed during the vaccination process in the population receiving the vaccine [2].

The COVID-19 infection in Albania as well as in other countries has had epidemiological waves, with a peak in early autumn and January – March 2021 [2, 3, 4]. The course of cases and incidence according to different periods is presented in the following graph:

Figure 1.1 shows the incidence from the 10th week of 2020 and 2021 compared between them, which shows a lower incidence for the same period in 2020.

Figure 1.2 shows the distribution of COVID-19 confirmed cases for the period from week 10 of 2020 to week 22 of 2021. The daily average of new cases for week 22 of 2021 was 10.9 cases/day [2, 5].

The percentage of positivity in week 22 of 2021 was 0.4%. The distribution of cases by age group was as in figure 2. The highest number of confirmed cases belongs to the age group 55–64 years with 21% of confirmed cases, followed by the age group 45–54 years with 17% of confirmed cases. It was noticed that the age group 65–74 years occupied a considerable percentage of 14% [2].

Whereas figure 2.1 is presented the incidence according to age groups per 100 000 inhabitants. The highest incidence of affected cases was in the age group 65–74 years, followed by the age group 55–64 years [1, 2].

Figure 3 shows the prevalence of fatalities by pandemic weeks [4, 6]

Vaccination against COVID-19 started on the date with the Comirnaty® vaccine (Pfizer/BioNTech) for the most identified priority groups of health workers as follows; (2)

- Health workers of COVID hospitals
- Health workers of laboratories diagnosing COVID-19;
- Health workers who perform sampling or nasopharyngeal tampons and conduct field investigation;
- Health workers who work in emergency services and intensive care
- Health workers working in infectious disease, pneumology and paediatrics services of infectious diseases.

A second phase involved all individuals living in long-term care institutions along with the staff working in them.

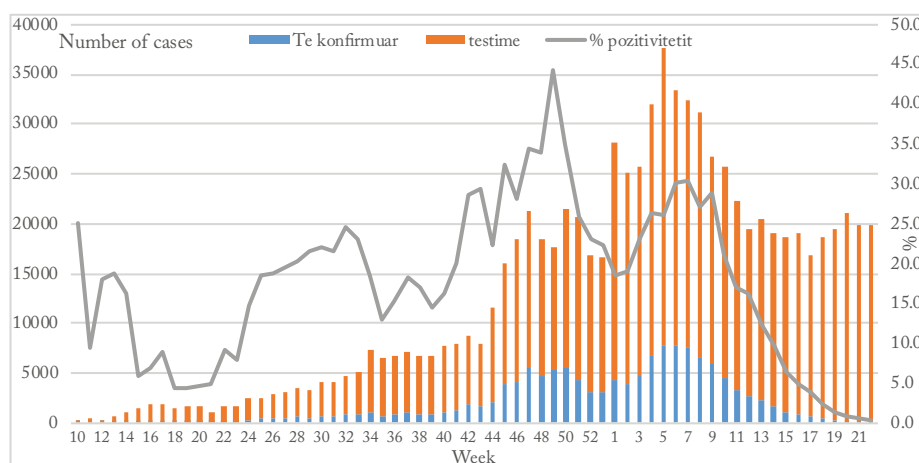


Figure 1.2. Percentage of positivity for COVID-19 in the tested samples

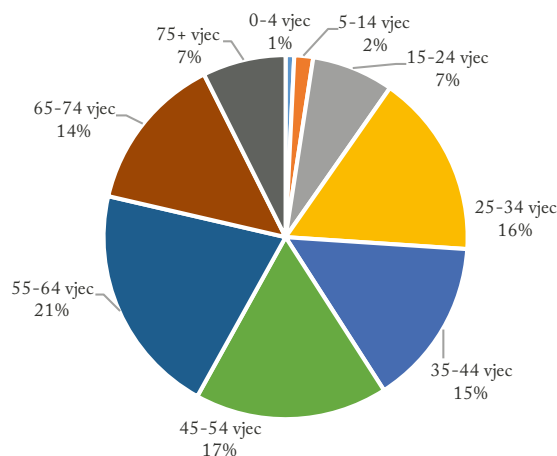


Figure 2.1. Distribution of confirmed cases by age groups (%)

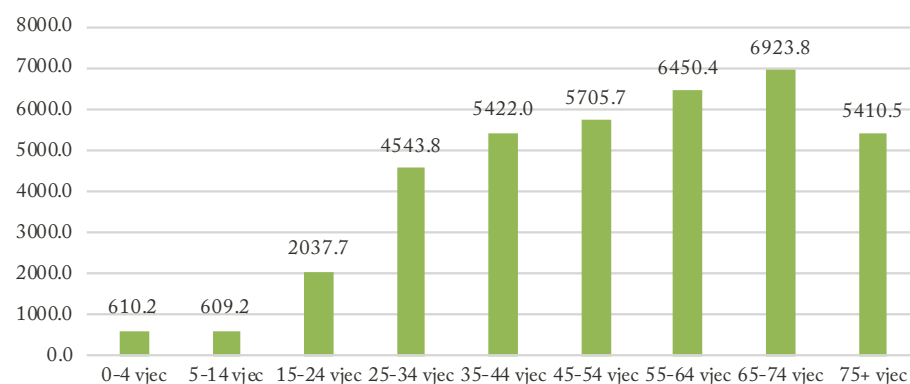


Figure 2.2. Incidence by age group per 100000 inhabitants

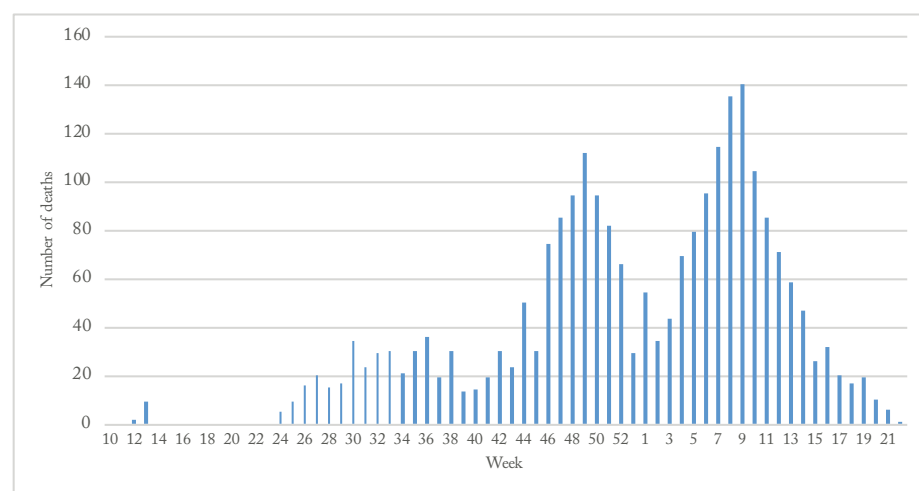


Figure 3. Distribution of fatalities by weeks

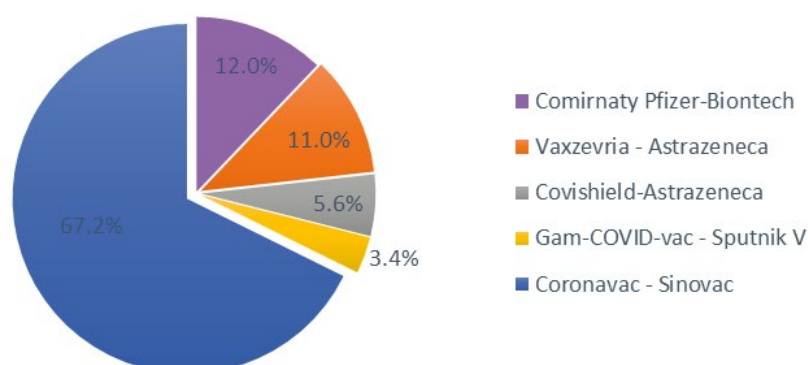


Figure 4. Doses administered per vaccine type

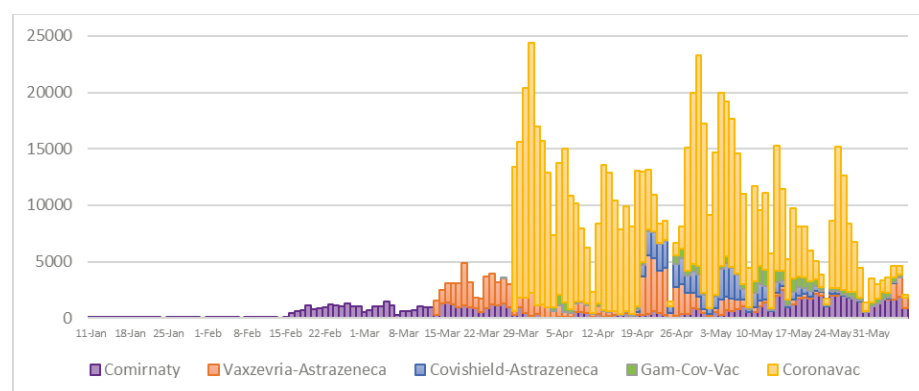


Figure 5. Doses administered by type of vaccine

With the increase of the quantities of incoming vaccines, the vaccination of the elderly has continued, starting from the age of 90+ and gradually decreasing until the age bands of 60+. In parallel with them are conducted teachers, law enforcement, tourism staff as well as employees working in key institutions for the country.

Gradually, each CHU has opened its own vaccination points in special facilities (facilities where sports, cultural or school activities take place) as well as in health centres.

Until the 22nd epidemiological week the quantities of vaccines received and the doses administered for each of them are as follows:

- 134,550 doses Comirnaty-Pfizer-BioN-Tech/96,726 doses administered
- 560,000 doses Coronavac-Sinovac/ 542,221 doses administered
- 120,000 doses Vaxzevria-Astrazeneca/ 89,359 doses administered
- 50,000 doses Covishield-Astrazeneca/ 47,808 doses administered
- 35,000 doses of Gam-Covid-vac, Gama-leya/ 25,558 doses administered

Table 1. Total vaccinations against COVID until the 22nd week

Covid-19 vaccination	Number of doses
First doses	492,905
Second doses	308,767
Total number of administered doses	801,672

In Albania, from 3 January 2020 to 17 June 2021, there have been 132,476 confirmed cases of COVID-19 with 2,454 deaths, reported to WHO. As of 6 June 2021, a total of 798,826 vaccine doses have been administered [3].

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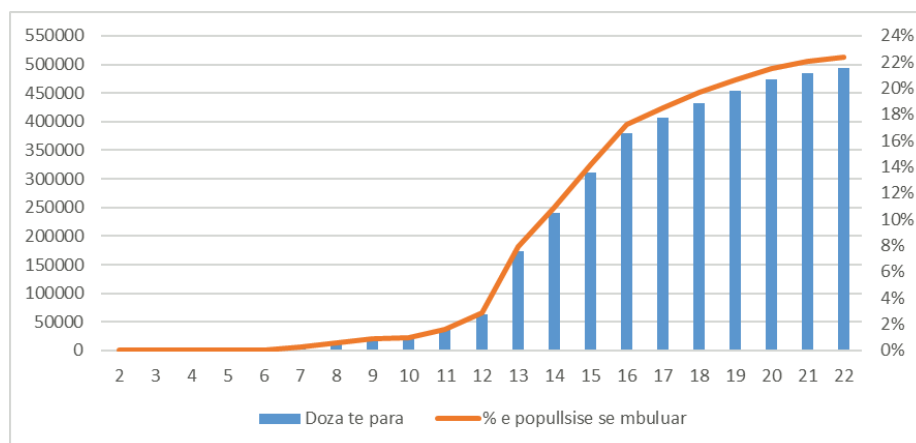
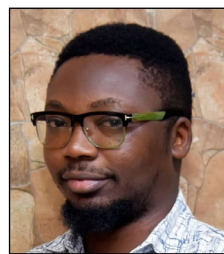


Figure 6. Coverage of the target population with the first dose

Medical Masks and their Challenges during the COVID-19 Pandemic



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Lwando Maki

Personal protective equipment (PPE) is an article used to prevent the wearer from coming in contact with hazardous, infectious, chemical, radiological, electrical, and physical agents [1]. It is worn to protect health care workers or any other persons from getting infected. The World Health Organization (WHO) has listed the following as PPE for the prevention and control of coronavirus disease 2019 (COVID-19):

- Medical/surgical masks hereafter referred to as 'medical masks',
- Filtering facepiece respirators hereafter referred to as 'respirators',
- Gloves, goggles, face shields and gowns [2].

According to the WHO, masks are classified broadly into two categories: medical and non-medical/fabric masks. The WHO defines a medical mask as a surgical or procedure mask that is flat or pleated, affixed to the head with straps that go around the ears or head, or both [3]. They must block droplets and particles while at the same time they must also be breathable by allowing air to pass. Medical masks are regulated medical devices [3]. For the fabric masks, the WHO has recommended a three-layer composition: an inner layer of hydrophilic material, for example, cotton; a middle layer of polypropylene spun bond hand-woven fabric material; and an outer layer of a hydrophobic material, for example, synthetic material [4].

Studies have shown that medical masks effectively control respiratory virus transmission in households and health care settings [5–9]. Studies of influenza, influenza-like illness, and human coronaviruses (not including COVID-19) provide evidence that the use of a medical mask can prevent the spread of infectious droplets from an asymptomatic infected person (source control) to someone else and potential contamination of the environment by these droplets [5–7]. Therefore, medical masks are vital in the fight against viruses transmitted via respiratory droplets. On 11th March 2020, the WHO characterised COVID-19 as a pandemic [10]. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the strain of coronavirus

that causes COVID-19, is transmissible via respiratory droplets, contact or aerosol [3]. The WHO advises using masks as part of a complete package of prevention and control measures to curb the spread of SARS-CoV-2. Even when used correctly, a mask alone does not sufficiently provide adequate protection or source control [3].

Other infection prevention and control (IPC) measures include hand hygiene, the physical distancing of at least one metre, avoidance of touching one's face, respiratory etiquette, adequate ventilation in indoor settings, testing, contact tracing, quarantine, isolation and vaccination [3, 11]. Together, these measures are critical to prevent human-to-human transmission of SARS-CoV-2 and serious illness or death from COVID-19 [3].

According to the WHO, in areas of known or suspected community transmission, universal masking for all persons (staff, patients, visitors, service providers and others) within the health facility is recommended [3]. Likewise, targeted continuous medical masking, the practice of mask-wearing by all health workers in clinical areas where patients are present, is advised [3]. Health workers providing direct care to COVID-19 patients should wear a medical mask (in addition to other PPE). Where aerosol-generating procedures are performed, health workers should wear a respirator continuously throughout the entire shift [3]. The WHO further recommends that persons with any symptoms suggestive of COVID-19 and caregivers or those sharing living space with people with suspected COVID-19 should also wear a medical mask [3]. The wearing of non-medical masks in places where close gatherings are inevitable, like in work and school environments, as well as, maintaining good hand hygiene when handling the mask, is also advised. Those not supposed to wear a mask include children below two years, people with breathing problems, unconscious, or anyone who cannot remove their mask by themselves [12].

Challenges

Access to masks

China is the leading manufacturer of masks in the world; it contributes about fifty per cent to global mask production [13]. The COVID-19 outbreak increased the demand for masks and resulted in a shortage in the worldwide supply [14-16]. The WHO estimated that 89 million medical masks were needed monthly to meet the global demand, requiring a forty per cent increase in production of the masks [17]. The shortage of masks caused by rising demand, panic buying, hoarding and misuse put lives at risk from the new coronavirus and other infectious diseases [17, 18]. Low-resource countries were the most affected, with healthcare professionals in public service not having masks and procuring them by their own means [13, 16, 17, 19-23].

Quality of masks

Inadequate quality control standards for the manufacturing of masks have been reported in Asian [24, 25] and African countries. Various types of cloth masks (i.e. cotton/woven or gauze) are widely utilized in various healthcare settings in resource-poor countries. In countries such as China and Vietnam, where the historical risk from emerging infections is high, the use of cloth masks by health care workers is widespread, despite that they are rarely mentioned in infection control policies and guidelines [21].

Cost of masks

Globally, since the onset of the COVID-19 pandemic, the cost of masks has surged [3, 16, 26]. The cost increase occurred in both low and high-income countries with an increase of 319%, 220% and 600% in the United States, Russia and Nigeria, respectively [14, 15, 17, 20]. The high-cost impacts access to masks with the low-income countries being more affected [13, 16, 20, 27].

Use of masks

The available literature has shown that incorrect usage of masks is substantial, with:

1. fabric mask used in health care settings;
2. medical masks used for longer periods than the recommended extended use policy;
3. the single-use mask being reused [23, 28].

This misuse leads to an increased risk of transmission of COVID-19 [14, 29, 30]; and is also associated with:

1. incorrect wearing techniques [23].
2. the mask being a source of infection [3];
3. poor comfortability and skin injury [3].

The use of a mask alone is insufficient to prevent COVID-19 infection. The implementation of other social and hygienic behaviours is also required [3, 9]. The literature has shown that stigma arises when mask-wearing is only for those with the disease or high risk. Therefore, universal masking also decreases stigma against COVID-19 positive patients as all individuals wear a mask [28].

The global health community is still working towards the goal of improved access and affordability of masks to help control the spread of COVID-19 [13, 15-17, 20]. It is an ethical responsibility for healthcare employers to ensure medical masks are available to all healthcare workers, irrespective of gender, age, socioeconomic status, race, religion, tribe, or sexual orientation [22, 31, 32]. The misuse and irrational use of the masks pose a danger to the control of the COVID-19 pandemic. Improper mask use does not prevent the spread of COVID-19 among the population; rather, it potentiates its spread, as well as, the spread of other disease conditions [28]. Individuals and organizations must be trained and supported to assume responsibility in their use of the appropriate mask in the correct manner, as per their country's laws/regulations [28, 32].

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Covid-19 Fourth and Subsequent Waves-Readiness and Preparedness



Michael Mncedisi Willie



Sipho Kabane

Data from various sources correctly predicted the third wave in advance before it occurred. Most of the predictions were based on the 2020 experience predictive models. Furthermore, the rate of infections seem to follow a seasonality pattern peaking between June- July and Dec – Jan. According to John Hopkins University, the current third wave appear to be at the same levels as the first two (John Hopkins University, 17 June 2021) as depicted in figure 1 below. Various COVID variants that emerge across multiple countries that may impact

the surge or COVID-19 indicate a possibility of a 4th wave. A survey study conducted in Canada revealed that more than two-thirds of the participants reported concerns about the potential for a fourth [1]. The study has further shown that participants depicting those vaccines would mitigate the impact of any future surge. Another report in the United Kingdom (UK) illustrates that the rising cases of COVID-19 in Alberta and British Columbia could result in the fourth wave [2]. A recent report shows that Countries like Italy are already experiencing the

fourth wave. These few studies indeed depict that the fourth wave is undoubtedly on the near horizon, thus offering South Africa an opportunity to plan and prepare for the 4th wave and put measures in place for mid-December. Nearly half (47%) of the France population had been fully vaccinated as of 31 July 2021, relative to almost 5% (4.8%) in South Africa, as depicted in figure 3 below. France in the early window of the 4th wave, further illustrating a possibility in South Africa. Preparedness also entails putting processes and standards in place, and recently a Bill was approved in France to tackle the fourth wave [3]. Countries could certainly use experiences from others to prepare for what is imminent, and critical learnings could be derived from interventions that did not work in the previous waves.

COVID-19 Vaccination Drive

Various reports have depicted a surge in COVID-19 cases in some countries as the global demand for vaccines increases. Many countries have also set targets to achieve herd immunity, with some countries performing better than others. South Africa accounts for a significant proportion of African COVID-19 infections and deaths (unadjusted for population). Figure 2 below depicts that as of 30 July 2021, South Africa had recorded a total of 2.4 million lives infected by COVID-19 disease, and nearly 72 000 had succumbed to COVID-19. Comparison figures for Morocco are 616 000 lives and about 10 000 deaths, respectively [4]. Figure 2 further depicts that South African is already on the third wave while a country like Morocco is still into the second wave with a fully vaccinated population of 27.4% compared to 4.8% in South Africa (see figure 3 below). However, what is also unique about South Africa is the number of tests conducted which are relatively high compared

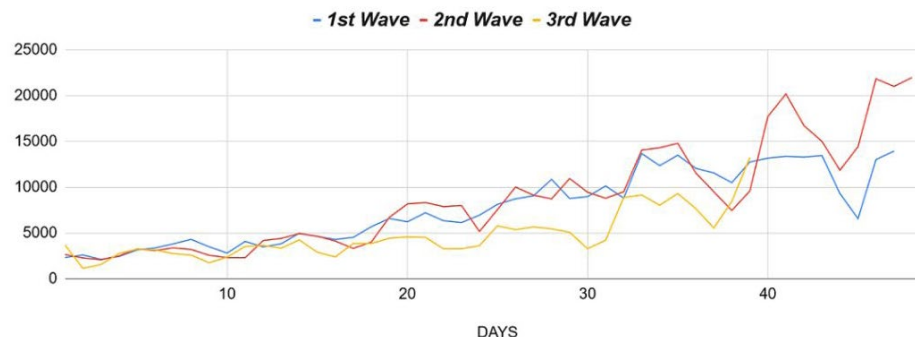


Figure 1. South African Covid-19: third wave chart
Source: John Hopkins University, 17 June 2021

to other African countries (unadjusted). The recent data indicates that South Africa has achieved lower herd immunity as of 30 July compared with neighbouring countries like Zimbabwe and Botswana. Comparatively speaking, Morocco has acquired higher herd immunity, with nearly thirty percent of its population fully vaccinated. Morocco is also the hardest hit in Africa, with the second-highest number of infections after South Africa (unadjusted). Table 1 below depicts key learnings from Morocco.

Types of Vaccines Approved in South Africa and Morocco

According to *track vaccines*, South Africa has six ongoing COVID-19 vaccine clinical trials, while in Morocco, there is one clinical trial running [13]. Both countries have four approved vaccines, with the Serum Institute of India – Covishield (Oxford/AstraZeneca formulation) the only common vaccine in the two countries. The following section depicts a comparison analysis of the types of Vaccines approved in two countries with the highest numbers of COVID-19 cases. The two countries also demonstrate evidence of capacity to manufacture vaccines.

Strategies to Prevent the Surge

The case studies of South Africa and Morocco depicted in the previous section illustrate that despite massive strategies and drive for vaccinations, each country utilising its four types of approved vaccines. Evidence presented also shows that even high herd immunity levels in countries such as Morocco are nearly twice that of China at 27.4% vs 15.5%, respectively (figure 3), the numbers continue to rise.

Herd immunity

Literature and medical experts depict that the purge of the COVID19 epidemic can

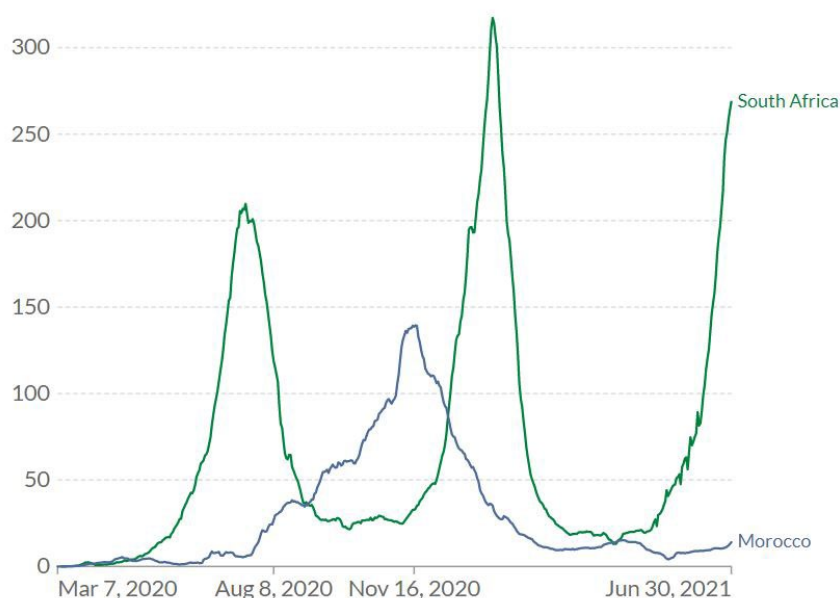


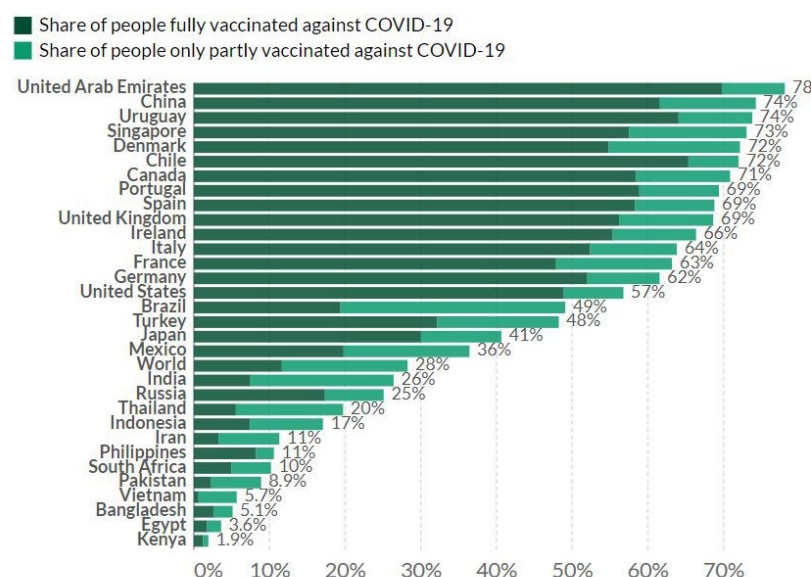
Figure 2. COVID-19 Key statistics for South Africa and Morocco as of 30 July 2021 [11]

Table 1. Morocco COVID-19 Vaccine's strategy- Key learnings [5]

Strategy employed	Interventions
Optimal use of technology	"Any citizen or resident is automatically assigned to the nearest vaccination centre using its digitised identity card number, unlike South Africa where vaccination is carried out in only 18 hospitals and is based on a pre-vaccination registration and appointment system [6, 7]."
Anticipation and preparedness	With anticipations and preparedness of what was reported elsewhere regarding vaccines demand, "As early as August 2020, Morocco became one of the first countries procure vaccines and placed orders [8]." In January 2021, the country confirmed orders of 65 million doses of vaccines: • British AstraZeneca – 25 million doses and • Chinese Sinopharm – 40 million doses. Furthermore, the country announced an agreement with Russia to deliver 8 m doses of the Sputnik vaccine. [9]
Mass communication strategy	"In August 2021, the health ministry deployed a large communications campaign to provide information, reassure and encourage people to get vaccinated [10]."
Early identification of vulnerable groups and populations at risk – use health insurance files to identify patients with chronic conditions.	"The country was proactive in early identifying vulnerable groups and population at risks such as the elderly and employed measures to reach these population people and others who live in rural areas, for example, are informed directly at their homes by social workers."

Table 2. Types of Vaccines Used: Comparison Analysis Between South Africa and Morocco

Country	COVID-19 Vaccines	Vaccine Characteristics
Morocco [14]	Gamaleya – Sputnik V	Approved in 70 countries, 19 trials in 7 countries
	Oxford/AstraZeneca – AZD1222	Approved in 119 countries, 33 trials in 19 countries
	Serum Institute of India – Covishield (Oxford/AstraZeneca formulation)	Approved in 45 countries, 2 trials in 1 country
	Sinopharm (Beijing) – BBIBP-CorV	Approved in 59 countries, 7 trials in 7 countries
South Africa [15]	Pfizer/BioNTech-BNT162b2	Approved in 97 countries, 24 trials in 16 countries
	Janssen (Johnson & Johnson) – Ad26.COV2.S	Approved in 56 countries, 11 trials in 17 countries
	Serum Institute of India – Covishield (Oxford/AstraZeneca formulation)	Approved in 45 countries, 2 trials in 1 country
	Sinovac-CoronaVac	Approved in 39 countries, 16 trials in 7 countries



Source: Official data collated by Our World in Data. This data is only available for countries which report the breakdown of doses administered by first and second doses in absolute numbers.
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Figure 3. Share of people fully vaccinated per hundred 31 July 2021 from select countries
Source: Our World in Data [12]

be achieved with a herd immunity of between 50%-60% through a vaccine [16]. Kleczkowski estimates that 75% of the population will need to be vaccinated to acquire a herd immunity level of 67%, assuming a vaccine efficacy of 90% [17]. Evidence

suggests that herd immunity level needs to be pushed up as high as 86%. Studies have shown varying efficacy levels across vaccines, and as depicted in the previous illustration, a combination of more than one approved vaccine in countries will still face

many challenges in demonstrating effectiveness with their level of herd immunity. Kleczkowski further warns that even with higher immunity levels in high efficacy vaccines might not eradicate the pandemic.

"If a vaccine is only 50-70% effective, as the Oxford and Sinovac vaccines appear to be, this is the highest herd immunity level that can be achieved if everybody gets the vaccine. Even with the higher efficacy of the Pfizer and Moderna vaccines, vaccinating nearly 90% of the population will be very difficult, as not everybody can or will want to be treated." [18]

Table 3 below depicts other challenges that many countries likely face with a combination of vaccines with varying efficacy levels. Uncertainties on the emergence of new variants, non-adherence to non-pharmaceutical interventions principally continue to impact the surge.

Containment and Mitigation Strategies

There is evidence that the numbers surge exponentially as soon as there is a relaxation on this measure. Stricter standards and policies such as lockdown, non-pharmaceutical efforts are effective in flattening the curve. Ferguson et al. showed the impact of self-isolation in reducing influenza by 10%, and the authors further showed the effectiveness of using a combination of measures such as school and workplace closures, adequate border controls, and others to an effectiveness rate high as 70% [20]. Another study by Brauner et al. found that closing all educational institutions, limiting gatherings to 10 people or less, and closing face-to-face businesses each reduced transmission considerably. The additional effect of stay-at-home orders was comparatively small [21]. Figure 4 below in a study conducted by Haung, Geyrhofer, Londei *et al.* showed small gathering cancellation, closure of education institutions, border restrictions, mass gathering cancellation and increased

availability of PPEs as the most effective government intervention [22]. With uncertainty on herd immunity and limitations depicted in this article, consistency in non-pharmaceutical measures coupled with aggressive vaccinations programs remains the appropriate strategy to flattening the curve.

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Table 3: Possible factors against achieving herd immunity [19]

Vaccine roll-out is uneven, and disparities in the distribution	Use of vaccines with varying efficacy levels and considerable variations in the efficiency of vaccine rollouts between countries and even within them. There are also regional disparities in some countries where single-dose vaccines are prioritised for remote areas, and two-dose vaccines are primarily in affluent urban and accessible places.
Uncertainty on transmission	The possibility is that people vaccinated cannot transmit and spread the virus. There is evidence that people who have been vaccinated also succumb to the disease, similar there are data showing reinfection.
Uncertainty on New variants	The new variants of SARS-CoV-2 are developing and seem to be more transmissible and resistant to vaccines.
Longevity of immunity	Possibility of Infection-associated immunity that wanes over time
Non-compliance to Non-pharmaceutical interventions	Behavioural change, the more people get vaccinated, the more they are likely to interact

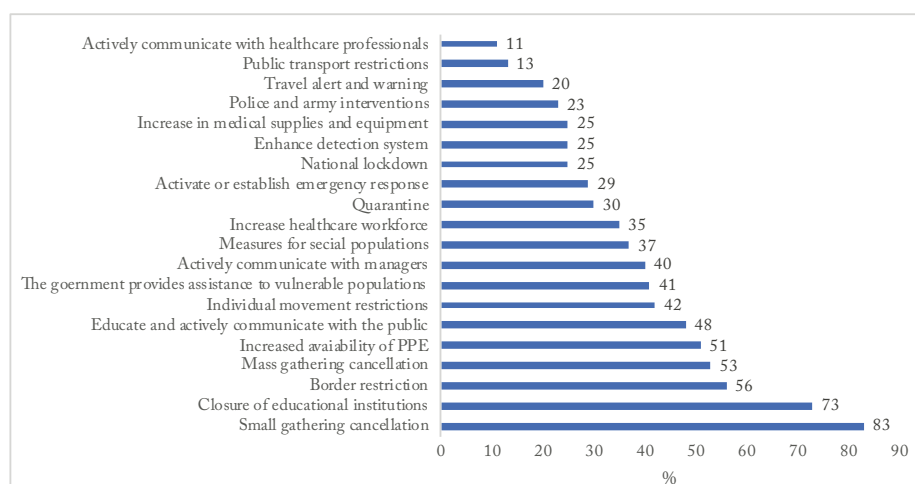


Figure 4. Effectiveness of government interventions during COVID-19

Source: Haug, N., Geyrhofer, L., Londei, A. et al. (2020)

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How Myanmar Doctors Taking Care of Patients under Heavy Fire in the Time of COVID-19 and Military Coup



Wunna Tun

Myanmar is a developing country in South East Asia with a population of 54 million people representing over 130 ethnic groups. Myanmar's journey to democracy began barely a decade ago, with the military dictatorship that had been in control since 1962 finally relinquishing power and Nobel Peace Prize laureate Aung San Suu Kyi being released from house imprisonment [1].

On February 1, 2021, at predawn, the Myanmar military and security forces conducted an unlawful and unconstitutional military coup. President U Win Myint, State Counsellor Aung San Suu Kyi, and several elected ministries and MPs were detained by the military [2]. Despite growing sorrow and fury, calls for anti-coup protests went viral within hours of the coup, including on social media and the internet [3]. Throughout history, doctors operating under dictatorships have committed crimes against humanity with or without their will. In the historic Nuremberg Physicians' Trial, Nazi doctors were imprisoned and executed

for war crimes and crimes against humanity for conducting medical experiments on concentration camp prisoners, as well as euthanasia and other executions on following orders from the dictator [4]. The Myanmar doctors also witnessed how Myanmar's military rule fuels poverty, weakens health systems and contributes to poor health outcomes over semi-centennial. Myanmar doctors have firsthand knowledge of the former military regime's devastation of the country's healthcare system and violations of human rights. It is apparent that Myanmar's democratic government, led by the State Counsellor, is attempting to reorganize in the five years she has been in office [5].

As fresh hope from neglect of the health sector to mending of the health system was crushed by the military takeover, Myanmar junior doctors debated what they might do to halt the coup in the best interests of patients. Junior doctors, nurses, and health care professionals led the resistance through the Civilian Disobedience Movement (CDM) on February 3, 2021, declaring that they would not accept any instructions from the illegal military dictatorship, which has proven that they have no respect for our impoverished patients [6]. Following the Physician Pledge, they provide emergency care to the people through charity clinics and private clinics at no cost, or some major surgical procedures at reduced fees with the help of well-wishers, while closing down medicine and nursing universities, hospitals, and clinics under military control [7].

Myanmar CDM junior doctors and health care professionals also engage with general practitioners, charity ambulance providers, and local non-governmental organizations to continue delivering HIV

and other chronic illness treatments via teleconsultation, home visits, and charity clinics [8]. Myanmar doctors and patients were largely secure until the bloodiest day since the coup, which triggered regular anti-military protests and demanded the release of elected government officials and legislators.

At the end of February, the military and security forces used live and rubber bullets, tear gas, and water cannon to disperse protestors around the nation and have killed, including shooting protestors dead in the streets and have laid siege to entire towns, with severe torture [9]. Private clinics, charity makeshift clinics, medical staff providing emergency care, and ambulances have been shot at for no apparent cause, with doctors jailed and others leaving their homes to avoid the military dictatorship. The World Medical Association (WMA) condemns the harassment and imprisonment of doctors in Myanmar on February 24, 2021 [10].

At the end of February, the situation has worsened. If the junior doctors were able to set up a charity base, the military could easily demolish it. The security forces watched the doctor's whereabouts and actions, which resulted in the quick closure of the charity clinics and the doctor's migration from one location to another, delivering services at deserted medical facilities across the country. Junior doctors have set up mobile clinics around the nation to treat the ill and injured during protests, but the main concern is not to get shot when delivering care on the ground. When it came to killing individuals, the military made no distinction between whether the doctors wore badges and uniforms or not. Junior doctors and health care professionals are putting their lives in danger to pro-

vide life-saving treatment to protesters and the people of Myanmar [11]. The WMA and its members are deeply troubled by the military and security forces harassing, arresting, kidnapping, and killing health care professionals.

At the April WMA Council Meeting in Seoul, the WMA and the National Medical Associations (NMAs) reviewed the situation in Myanmar. WMA published a council resolution in support of Medical Personnel and Citizens of Myanmar at the 217th Council Session in Seoul, April 2021, to immediately cease assaults on health personnel and medical facility and secure their security to offer appropriate health care provisions to everyone [12].

The increase of attacks against doctors continues, and junior doctors are being detained at night or apprehended during the day. The junior doctors could not treat patients openly as previously, move among their places every month, hide, consider the patient first, and treat following the Physician Pledge [13]. There is no assurance that young doctors will be secure because their names have been revealed and they are being watched by the security forces. Before the coup, the State Counselor secured 3.5 million vaccinations from India for the Myanmar people. The junta took control of the majority of the vaccine injections but rejected plans to prioritize vaccines for the elderly, and the doses were used to vaccinate soldiers. Due to the military's refusal to share details about its immunization program, Covax, the worldwide vaccine-sharing organization, postponed a shipment of 5.5 million doses in March.

In Myanmar, where the Myanmar military controls immunization, the third wave of COVID-19 began in June 2021 [14]. The military junta has prohibited commercial suppliers from selling oxygen to the public. Furthermore, the junta has ordered charity oxygen supply groups to stop giving essential oxygen to individuals in need, as well

as denying oxygen supplies to private and charity clinics. COVID-19 infections have also made their way into prisons, particularly those harbouring anti-coup protestors [15]. The military has rejected COVID-19 patients at military-run medical facilities, leaving scared locals to self-treat at home. When people do travel to the hospital, they have frequently turned away because the facilities are short of oxygen, treatments, and beds. The security forces opened fire on individuals queued up for oxygen cylinders for their ailing families, and oxygen was being funnelled to the military hospitals [16]. Personal protective equipment (PPE) and oxygen were seized for exclusive military use, and vaccinations provided by India were hoarded for exclusive military use. Doctors had been arrested for providing vaccinations in remote regions, and numerous individuals had died at home from COVID-19, resulting in long queues at crematoria.

The Myanmar dictatorship has turned coronavirus into a weapon by restricting access to treatment, which amounts to "weaponizing COVID-19 to destroy its opponents" [17]. Desperate family members browse social media groups and encrypted smartphone applications every day in quest of oxygen supply for their loved ones. The phrases "urgent," "emergency," and "please assist me" kept appearing in a never-ending stream of frantic texts. Doctors forced to flee to avoid imprisonment have re-established underground networks of clinics and teleconsultation services for COVID-19. Every day, they respond to thousands of inquiries from COVID-19 patients and patient attendants via applications, social media, and video channels to reach the people. They worked diligently all day and night to provide quality care, responding to urgent messages on encrypted smartphone applications or providing video consultations [18]. Many Myanmar physicians, nurses, and their families have died as a result of COVID-19 due to a lack of oxygen in the current third wave, and

the number is steadily increasing. Social media looks to be a condolence site, as it is packed with funeral announcements of health professionals and their parents [19]. In addition, doctors in Myanmar who are treating patients infected with the coronavirus are being detained. Doctors have independently made free house visits to assist people sick with the critical Coronavirus to preserve the patient's life, despite the danger of being imprisoned. The military and security personnel enticed the doctors to a residence by claiming to be critical COVID-19 patients in need of urgent medical treatment and then arrested them upon arrival, while the military stormed the doctor's offices and arrested the doctors [20]. Doctors are revered and safeguarded, even during times of war without being arrested. No country in the world has jailed its physicians for saving the lives of COVID-19 patients. Doctors and nurses are being murdered, injured, or abducted; charity and makeshift clinics are being destroyed or damaged, and medical equipment is being taken; as a result, the military has violated the Geneva Conventions willingly and committed a crime against humanity [21]. The junta's attack on Myanmar's healthcare system and healthcare professionals was undermining the right to health. As there is no meaningful action to stop military junta by the international community but by offering rhetorical responses, there is no more option left for Myanmar, National Unity Government and People of Myanmar declared war against the military on 7th September 2021 to restore collapsed health care and democracy in Myanmar [22].

More than 200 health professionals have been imprisoned in the eight months since the military coup, and thousands of professionals have had their medical licenses and passports revoked. There is catastrophic affliction on medical personals in terms of mental and physical breakdown due to facing dual enemies of Myanmar. In amidst all Myanmar's darkness and gloom, beams of

light and hope may be found in the doctors' perseverance and togetherness. However, Myanmar junior doctors and health care workers are continuing to doing their utmost to save patients' lives and others in need how dire and dangerous the situation has become, risking their own lives of being killed, tortured or abducted from human adversaries – merciless military junta and the covid19 infection.

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Ethiopia's Medical Talent Dilemma: Lessons Learned and The Way Forward



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Background

Determinants of public health are complex and depend on factors such as social infrastructure, political stability, economic development and most importantly, availability of an appropriate and accessible health service through well-trained providers.

Universal health coverage is realized when everyone has access to quality essential healthcare services with financial risk protection. The primary public health goal of developing countries like Ethiopia is improved quality of care, increased service utilization and better health outcomes, and improvement of the health workforce efficiency is important in that regard. This approach, however, is one that Ethiopia has struggled to achieve. In 2019, the universal health service coverage index in the country was still very low at 39% [1].

To achieve universal health coverage, it is essential to ensure the quality as well as the sustainability of the health workforce,

through regulation of education and practice mechanisms. In Ethiopia, these regulatory mechanisms and resources are under stress due to a mismatch between health professional education, public healthcare and speciality field demands, as well as increased international mobility by health professionals.

The Dilemma

Career Preference and Starved Specialty Fields

Health workforce education and training is a complex investment, along the intersection of educational systems, labour market policies, and translational public health impact. [2, 3] These challenges remain a crucial bottleneck in achieving universal health coverage in low and middle-income countries.

In Ethiopia, medical training is rather disconnected from the needs of the health sys-

tem and that of the public at large. Efforts are continuously being made to bridge the gap between the supply of well-qualified physicians and the ever-increasing demand for their services. One such effort is the “flood and retain” strategy, rolled out by the Ministry of Health to strengthen the healthcare system by expanding physician training. The enforcement of this policy has been an attempt to address the health demands of the public by encouraging meaningful change in the number of available professionals at all levels [4, 5, 6]. This was done through medical training unit expansion and subsequent large input of trainees with currently more than thirty recognized and operating medical schools, including private institutions, in the country.

The overwhelming number of physician output that followed the implementation of this strategy, however, was not able to provide a satisfactory interface in line with balanced accommodation between universal health coverage and job creation.

This in turn has left room for the skewed distribution of skill sets and health professionals with inclination to a specific area of speciality and place of practice, leaving the healthcare demand of the vast majority of the population unmet.

A 2015 study [3] done on final year medical students and interns, found that 70.1% of its participants showed intent to practice clinical medicine in an urban setting, with 76% gravitating towards internal medicine and surgery. The inclination towards these fields, and the neglect of paediatrics and gynaecology, is at clear odds with the healthcare needs of the population given the country's maternal and neonatal/child mortality status [7]. The study also found income potential (42%) to be a factor that significantly affected students' field and placement choices. In addition to prestige, the intent to work in urban settings is also rooted in the reality that very few students from rural households reach higher education, causing a further impediment to universal health coverage by skewing the pool of professionals willing to work in rural settings [8].

Talent Exodus

Ethiopia has a healthcare workforce ratio of 0.7/1000 against the WHO ratio of 2.3/1000 which is recommended as the ideal imperative for health coverage and impactful healthcare interventions [4]. Despite the implementation of the "flood and retain" strategy to mitigate this, the country still continues to suffer physician shortage through the mass exodus from the country, impeding progress toward the attainment of universal health coverage [4]. Reasons for health migration from the Sub-Saharan region in general, and Ethiopia in particular, have been summarized as an absence of adequate professional support and development, inadequate financial incentive, and desire for professional prestige and respect

that are better fulfilled in other nations [9, 10].

Reports have shown that Ethiopia remains one of the countries with the highest physician emigration in Sub-Saharan Africa, with significant intent shown by medical students to emigrate within 5-10 years of graduation [11]. It must also be noted that, while emigration continues to be the main reason that talent continues to bleed out of the country, physicians leave public service to better-paying jobs in NGOs and the private sector [12].

A study [11] done on medical students reported that 53% of its participants indicated an aspiration to emigrate following graduation, with such an attitude predominantly prevalent among final year students and interns. This same pattern of intent was also shown to be more prevalent among students in clinical training than their preclinical counterparts, which stands as an indication of factors in clinical years that significantly affect students' need to emigrate.

Compared to other professional areas, the medical profession appears to be the most susceptible to emigration owing to the increasing demand for health professionals in the developed world that offer better pay, better living conditions, and a better working environment. Educating medical professionals is an expensive enterprise for any developing country, and through a conservative estimate, it has been shown that close to 30,000 USD is lost for every Ethiopian medical school graduate who emigrates [4, 10, 11, 13]. As it stands, the 'flood' has done more to flood the needs of other nations and has inadvertently negated the very aim it was established to achieve.

Strike and the Paradox that Ensued

In May 2019, a nationwide strike was animated by medical interns of several teaching hospitals protesting against the long

hours of work, little pay, substandard working conditions, and limited employment and career advancement opportunities, with a call for leniency in license and degree acquisition, and healthcare insurance [14, 15].

Among the demands, the issue of employment was met with an uncalled-for consequence as the Ministry of Health lifted its central responsibility of assigning physicians to health facilities across the country. The central deployment freeze shifted the mandate of hire to regional and city administration health bureaus, opening doors to corruption and nepotism, and leaving graduates with the only option of seeking employment for themselves. This outcome has put the country in a state of paradox: a nation whose healthcare needs are unmet, and medical professionals are unemployed. As it remains, there is no estimate of the amount of unemployed general practitioners at this time, and/or an estimate of its impact on the unaddressed healthcare needs of the public [14, 15].

COVID-19 Pandemic and Current Reality

As the pandemic continued to wreak havoc in its health systems, the Ethiopian government responded to the low healthcare professional-to-population ratio by bringing on unemployed practitioners in rapid response and treatment teams through contract and volunteering agreements. While such an arrangement came at a great loss for practitioners, it still failed to address the needs of most treatment centres, especially those in peri-urban and rural areas, as physicians left posts due to substandard working conditions and compensations.

Unemployed practitioners who did not choose this path now find themselves in a predicament: contemplating exile, or exploring other professional avenues far from their expertise.

Conclusion and Call to action

Needless to say that, neither the healthcare needs of the population nor the needs of the medical students and graduates have been addressed. A starting point for reconciliation towards universal health coverage can be the placement of medical graduates to proportionally address the healthcare workforce. As medical education directly impacts public health and the quality of healthcare, it must base its framework on the needs of the health system and the public.

Longitudinal analyses are warranted to address healthcare demands with priority set on understanding students' preference, placement choice, attitude towards training and future practice of clinical medicine for evidence-based mitigation efforts. In addition, beyond local training, investments in students and graduates from rural areas, to address the high population concentration and health demand in those areas are called for.

Since the existing curricular policy has been employed aggressively toward increasing healthcare professionals through the 'flood', a parallel amount of work on the 'retain' to prevent further hindrance of health care equity, is an imminent necessity. Policy review of regulatory frameworks, management and information systems for health human resources are needed to create a system that is able to meet the current and future needs of health professionals, and that of the population.

Statistical updates on the areas of emigration and unemployment are also mandated. Through emigration, in addition to the loss of significant investment of public funds made for medical training, subsequent critical contributions to the improvement of health systems are lost as well. In that regard, improvements in retention incentives, employment, professional development and career advancement opportunities, and ad-

ressing administrative inefficiencies and corrupt practices in the system are warranted interventions.

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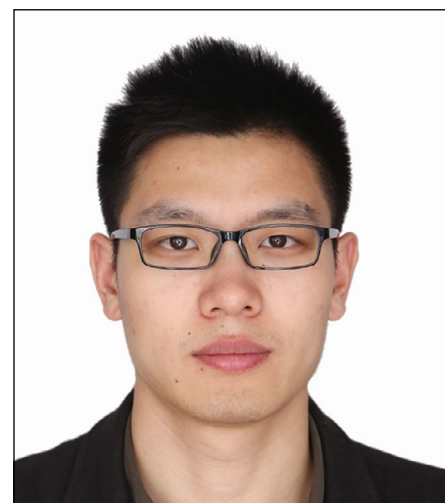
Top 10 Progress Events in Clinical engineering in China in 2020



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The COVID-19 pandemic posed a huge challenge to healthcare systems. The new healthcare demand accelerated the convergence of new technologies, medical technology innovation and application across boundaries. A large number of new technologies and products have emerged in the field of clinical engineering, and the application of related technologies and products have been greatly accelerated. We reviewed the hot topics and the progress of technology management in the field of clinical engineering. With the guidance of the relevant policies issued by relevant ministries and commissions in 2020, the opinions on the important progress in this field in 2020 were collected by the Chinese Society of Clinical Engineering of the Chinese Medical Association. We collected all kinds of guidelines and norms formulated annually by clinical engineering societies, quality control centres and clinical engineering departments in various provinces and cities. At the same time, we gathered experts' consensus and formed the annual ten research progress events report in the field of clinical engineering, which may help the medi-

cal technology industry and the healthcare organizations to grasp the future development direction in the field of clinical engineering.

1. Prepares and applies Infection Control Technology Plan for Medical Equipment and Medical Supplies Use Guide for Global Epidemic Prevention

The COVID-19 coronavirus is characterized by rapid transmission, wide infection range and great difficulty in prevention and control. For major public health emergencies, clinical engineering, as one of the four pillars of healthcare delivery organizations, working together with physicians and clinicians, nurses and pharmacists, shoulders the shared responsibility. And clinical engineering departments of healthcare delivery organizations across the country have worked out various emergency preparedness schemes [1]. The Chinese Society of

Clinical Engineering of the Chinese Medical Association and its provincial Clinical Engineering Branches gave full play to the advantages of the experts nationwide, and quickly organized a series of online meetings to discuss and reach consensus [2]. The topics covered the emergency classification scheme of epidemic prevention materials, emergency management of medical equipment and emergency technical standards, etc., which made important contributions to the formulation of standardized procedures and emergency response plans in epidemic prevention and control for public health emergencies.

In February 2020, the Clinical Engineering Branch of Shanxi Medical Association issued the Guidance for Medical Equipment Cleaning and Disinfection during the Prevention and Control Period of COVID-19 in Shanxi Province. The guidance included the safe use of CT, MR, DSA, X-ray machine, ultrasound equipment, ventilator, monitor, infusion pump and defibrillator, as well as the prevention and control plan of cleaning and disinfection for these nine

types of equipment. In February, the Clinical Engineering Branch of Jilin Medical Association, together with Jilin Medical Imaging Quality Control Center, organized experts in the fields of clinical engineering, imaging, metrological testing and standardization, and led the formulation of the Technical Specifications for Mutual Recognition and Sharing of Medical Imaging Examination for Epidemiological Prevention and Control. In March, Guangdong Medical Equipment Management and Quality Control Center organized experts to formulate the Guiding Opinions on Strengthening Medical Device Emergency Support and Quality Control during COVID-19 Prevention and Control in Guangdong Province [3]. In April, according to the requirements of the joint prevention mechanism of the three provinces and one city in the Yangtze River Delta Region, the medical equipment quality control centres of Shanghai, Jiangsu, Zhejiang and Anhui jointly formulated the Guiding Opinions on the Quality Control of Medical Equipment in the Yangtze River Delta Region during the Prevention and Control of COVID-19[4]. The guidance opinions included suggestions on the configuration of medical equipment in the fever clinic and guidance on the emergency modification of isolation gown. In September, clinical engineering at the First Affiliated Hospital of Zhejiang University School of Medicine published the Guidance Manual for the Application of Personal Protective Equipment for Respiratory Infectious Diseases. This book introduces COVID-19 PPE management and use experience of five categories namely face protection, respiratory protection, body protection and foot protection, and nearly one hundred kinds of protective materials in total collected from all over the world, their identification, classification, and evaluation. The book summarizes and compares relevant PPE standards and principles both at home and abroad, combined with bench test and evaluation puts forward suggestions for PPE selection and use.

2. New Policies on the management of medical supplies accelerated the application and promotion of medical device technology evaluation

With the strengthening of national management on the use of medical supplies in hospitals, health technology assessment for hospital medical technology, especially medical supplies and consumables, is being promoted in China. In 2020, the Institute of Hospital Management of the National Health Commission and its clinical engineering laboratory conducted a project, which combines evidence-based information at home and abroad with hospital consumables management experience and reviews from the haemostatic materials classification and selection, specification, use evaluation, supervision and outcome, and formulates the expert consensus for haemostatic materials management. In 2020, the Chinese Society of Clinical Engineering of Chinese Medical Association organized an interdisciplinary expert group, taking antimicrobial sutures as an example, and cooperated with professional health economics research institutions to carry out the relevant health technology evaluation. By researching from the perspectives of safety, effectiveness, economy and sociality, this project generates a value evaluation report of antimicrobial sutures [5]. It has been issued in many regions of the country and provides an important reference for the management of other kinds of medical consumables.

3. Clinical engineering's participation and contribution to the region-wide evaluation and demonstration of digital diagnosis and treatment equipment

In recent years, some of China's leading academic clinical engineering departments

have made great breakthroughs in participating in the national key research and development projects of digital diagnosis and treatment equipment sponsored by the Ministry of Science and Technology. The clinical engineering departments of more and more medical institutions, such as China-Japan Union Hospital of Jilin University, Union Hospital affiliated to Tongji Medical College of Huazhong University of Science and Technology, Shanghai Jiao Tong University Affiliated Sixth People's Hospital [6], Inner Mongolia Autonomous Region People's Hospital, and the First Affiliated Hospital Zhejiang University School of Medicine, have presided over or participated in the digital diagnosis and treatment equipment evaluation and demonstration projects to establish a batch of digital diagnosis and treatment equipment evaluation system for large medical equipment such as radiography, magnetic resonance, ultrasonic diagnosis and radiotherapy. In 2020, the Institute of Hospital Management of the National Health Commission set up ten clinical engineering research bases nationwide, aiming to further promote the research and talent training in the field of clinical engineering in China, to support the development of healthcare and medicine, and to enhance the scientific research ability and influence of clinical engineering departments.

4. Pilot application of medical device unique identification (UDI) technology in-hospital medical device management

The International Medical Device Regulators Forum (IMDRF) issued the UDI Guidelines in December 2013, marking the beginning of the global implementation of UDI. At the end of 2019, the National Medical Products Administration in China issued the Notice on the First Batch of Implementation of the Unique Labeling of Medical Devices, and various provinces

and cities across the country organized several medical institutions to launch the pilot program. UDI, as the electronic ID of medical devices, is the link and bridge connecting the hospital with management departments at all levels and external enterprises [7]. It is the basis for the full life cycle supply chain management of medical devices within the hospital, and the key role for realizing the standardization and lean management of medical devices in the hospital. 108 hospitals, such as the General Hospital of the Chinese People's Liberation Army and the First Affiliated Hospital of Sun Yat-sen University, as the first batch of pilot units, have continuously improved and optimized their medical supplies management structure within the hospitals, developed and upgraded the information system related to medical supplies, and explored the construction of a UDI-based whole life cycle management system [8]. It realizes the bidirectional traceability management of medical consumables supply and use in the hospital as well as the unification and standardization of basic logistics information both inside and outside the hospital.

5. The COVID-19 epidemic accelerated the use of telemedicine technologies

The COVID-19 epidemic had accelerated the explosive growth and widespread application of telemedicine. The telemedicine support has been increased significantly in various countries, including the coverage by more and more health insurance programs. Social acceptance of telemedicine is rapidly spreading as well. The service volume of telemedicine has increased greatly, the related technologies and industry are also developing rapidly, and the role of clinical engineering in it has been further recognized [9] [10]. On February 7th, 2020, China National Health Commission released a document about promoting the internet medical consultation service during epidemic prevention

and control and strengthening its management. Hundreds of hospitals opened their relevant online service accordingly. Over the same period last year, the number of online diagnoses and treatment in all hospitals of China's National Health Commission increased by 17 times. The number of medical consultations on some third-party internet service platforms increased by more than 20 times and the number of online prescriptions increased by nearly 10 times.

6. Chinese Society of Clinical Engineering hosts Medical Device Innovation Competition to promote the innovation and application of clinical engineering

In response to the call for scientific and technological innovation in China, the Chinese Society of Clinical Engineering of the Chinese Medical Association (CSCE) gave full play to the advantages of clinical engineering to promote the innovation and application of the medical device in China. Since 2019, the Clinical Engineering Society of Chinese Medical Association has cooperated with Henan Tuoren Medical Device Group Co., Ltd to jointly carry out the "Tuoren Medical Device Technology Innovation Competition" in clinical engineering nationwide for two consecutive years. "Tuoren Medical Device Technology Innovation Award" was a national science and technology award approved by the Ministry of Science and Technology of China and the State Office for Science and Technology Awards in January 2011.

From 2019 to 2020, with the strong support of clinical engineering chapters of medical associations and medical institutions in all provinces, the "TuoRen-Medical Device Science and Technology Innovation" competition had been actively responded and enthusiastically participated by more than 500 clinical engineering staff and clinicians

in 25 provinces and autonomous regions. In two years, a total of 345 medical device innovation projects were collected, among which 229 were product research and development projects and 116 were innovation management projects. After the submitted project passed the project evaluation of each province, it would be recommended to participate in the National Tuoren Medical Device Science and Technology Innovation Contest, and the winning project will be selected by national experts finally. In two years, a total of 58 outstanding projects have been selected, respectively winning the first, second and third prizes accordingly in the country. Some of the outstanding projects are undergoing product transformation. Through the construction of the clinical engineering innovation competition platform, it further promotes the integration of medical and industrial, as well as the innovation and development of medical devices in China.

7. Ten medical AI products entered the Chinese market after being approved by National Medical Products Administration

In recent years, the investment in the field of medical artificial intelligence around the world shows a trend of rapid growth, and the industries related to intelligent assisted diagnosis in China are also rising rapidly [11]. In 2017, China Food and Drug Administration issued a new version of the Classification of Medical Devices. If the diagnostic software provides diagnostic suggestions through algorithms, only has auxiliary diagnostic functions, and does not directly provide diagnostic conclusions, then the application of Class II medical devices shall be declared. If the diagnostic software automatically identifies the lesion site through the algorithm and provides clear diagnostic tips, the Class III category of medical devices shall be applied. Since the end of 2019,

AI products has been extended from lung nodules to cover heart, brain, endocrine, pathology, ultrasound and other directions, realizing the auxiliary diagnosis and prediction of a variety of diseases.

From late 2019 the AI healthcare industry went through an intensive clinical trial process and submitted registration applications. In 2020, there were 10 products from 8 AI medical enterprises, including Keya Medical, LEPU Medical, BioMind, Silicon Intelligence, AIRDOC, InferVision, SHUKUN, United Imaging Intelligence and Deepwise, which had been approved by the National Medical Products Administration of China and obtained the Class III type of AI medical certificate. They will become mature products for market use after clinical trials, in cardiology, neurology, endocrinology, orthopaedics, thoracic surgery and other disciplines. Among them, the number of cardiology products is the largest.

8. Rapid application of intelligent management of medical equipment based on Internet of Things

A number of Tier Three Grade A hospitals in China have built IOT technology-based data acquisition and management platforms for hospital medical equipment. Data of large medical equipment and emergency medical equipment are transferred to the data centre of the hospital. And real-time integration, development and utilization are carried out with the clinical diagnosis and treatment system [12]. Beijing China-Japan Friendship Hospital has integrated the Internet of Things, mobile Internet, 5G private network, face recognition, and "micro-service" system integration architecture, and carried out a comprehensive exploration of the haemodialysis diagnosis and treatment management system. In February 2020, Wuhan Tongji Hospital established a three-level monitoring and

treatment system, namely the automatic early warning and rapid response system for patients with critical events, which can monitor patients' vital sign parameters in real-time and conduct a comprehensive evaluation, and provide timely early warnings for patients with critical situations. Jiangsu Provincial People's Hospital has developed a monitoring system for temperature, humidity and power supply in the locations of large medical equipment installed [13]. By collecting the requirements of the equipment manufacturers for temperature, humidity and auxiliary power supply voltage of all kinds of medical equipment, the AC voltage in the machine room environment is sampled and monitored, and the stored data are also retrievable. By pushing the alarm information to the platform, the cloud platform monitoring system based on the Internet of Things technology for the collection, transmission and storage of environmental state data of medical equipment was established. West China Hospital has developed online quality control and early warning platform based on real-time data. By monitoring the output parameters of medical equipment in real-time and comparing with the established quality control model, the platform can give early warning in real-time if abnormal happens, which helps a lot in enhancing the safety of patients.

9. COVID-19 is driving the rapid growth of disinfection and logistic robotics technology and their practical application in hospitals in China

The application of intelligent robots in hospitals has seen explosive growth in recent years. The need for safer and more reliable services in the medical industry is the key to the commercial products of medical service robots. Applications include clinical settings such as isolation wards, ICU,

operating rooms, fever clinics, etc. The disinfection robot has become the popular product in the fight against COVID-19 in 2020 due to its ability to solve problems such as difficulty in disinfection, manpower shortage and overall cleaning [14]. Driven by the need to combat COVID-19, many technologies and robotics companies have shipped their latest generation of robots across the country. In terms of logistics robots, China's domestic AGV logistics robot industry has seen explosive growth in recent years. The growth rate has been maintained at more than 30% for several years, and the scale of the logistics robot industry is constantly expanding. With the outbreak of COVID-19, the logistic robot has become an important measure for hospitals to cope with infection risk and manpower shortage. Clinical engineering departments in many medical institutions across the country have deployed logistic robots in areas such as isolation wards and fever clinics to reduce the risk of cross-infection.

10. Rapid approval and emergency deployment of novel coronavirus assay reagents to enhance nucleic acid test capability

COVID-19 is a highly infectious virus disease. Nucleic acid detection is an important method to identify novel coronavirus infections. Rapid and accurate nucleic acid detection method is of great significance for early detection of infected persons and control of epidemic spread. COVID-19, according to Novel Pneumonia Diagnosis and Treatment Protocol for Coronavirus Infection, mainly adopts two methods for nucleic acid detection, one is real-time fluorescence RT-PCR kit detection, the other is virus gene sequencing. Nucleic acid detection kits could produce detection results faster, which is more suitable for the current prevention and control of COVID-19. Nucleic acid detection methods mainly

include PCR, thermostatic amplification, sequencing, CRISPR detection, gene chip technology and so on[15]. The second-generation PCR technology (fluorescent PCR) is the mainstream method for virus detection, and it is also the most widely used technology for Novel Coronavirus detection kits approved and marketed in various countries at present. On January 26, 2020, China's National Medical Products Administration approved the first batch of 4 novel coronavirus testing products from 4 enterprises. It includes BGI Novel Coronavirus assay kit, BGI DNBSeg-T7 sequencing system, and two nucleic acid assay kits produced by Shanghai Zhijiang Biotechnology Co., Ltd and Shanghai Jen-uoBiotech Co., Ltd. In 2020, China's State Medical Products Administration approved a total of 54 nucleic acid detection reagents for Novel Coronavirus, including 8 nucleic acid rapid detection products, forming a complete detection technology system, with a production capacity of 24.018 million copies per day. During the COVID-19 period, China's clinical engineering departments purchased various nucleic acid testing equipment and reagents in an emergency manner, and expanded the capacity of rapid testing reagents and testing equipment in accordance with the needs of epidemic prevention and control, so as to continuously improve the nucleic acid testing capacity of medical institutions.

Summary

Based on the consultation of experts from the Chinese Society of Clinical Engineering of the Chinese Medical Association, we sorted out the top Ten Progress Events in the field of clinical engineering. This paper may be helpful to sort out relevant research hot-spots and development trends, helps hospital managers and clinical engineers to grasp the future development direction of clinical engineering in China, and provide support for decision-making analysis of new technology management.

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Promoting Self-Care in Children and Youth: A challenge in itself



Michel Botbol

As with adults, self-care with children and adolescents has received good press in educational science literature and health promotion journals. Both consider it as a key factor in a person-centered perspective in health. Typically, these publications see the promotion of self-care at the centre of the education that a functional family should provide to their children to comply with its ambition to develop their well-being. An example of this approach is provided by an article which, under the title "Self-Care for Youth and Families" [1] lists several ideas of "self-care strategies to get started"; to such extent that it becomes a sort of treatise on knowing how to live, designed for functional families aiming to develop the self-care of their children and adolescents: indeed, following a caveat where the author reminds that self-care is an activity or action that one enjoys and makes him feel good during and after.

Here are some of the ideas proposed "to get started" in this perspective:

- Get enough sleep at night.

- Exercise, make sure it is something you enjoy, such as a walk, yoga, swimming, etc.
- Meditate for a short time every day.
- Spend quality time with your family or friends.
- Read a book.
- Take a nice relaxing bath.
- Start a hobby such as crafting, writing, or cooking.
- Start a journal.
- Listen to music.
- Dancing.
- Practice mindfulness strategies.
- Have a date night.
- Take time away from technology.
- Volunteering.
- Family game night.

Certainly, as the authors underline it in their caveat, these are only suggestions of common sense which cannot be dangerous and are surely the object of a broad consensus in the target population: that is, in those who are doing well enough to have only positive behaviours and who are integrated or globalized enough to share the same type of representation of what is positive. But it is all the same surprising for a clinician of the old continent, that this type of article is accepted without giving rise, it seems, to sharp criticisms, at least on the internet which is however not stingy with excessive or even unreasonable comments on all and every subject; i.e. is not disputed either the ideas of general normativity (on which the all concept is based) or the cultural or social biases underlying these ideas, everything happening as if they were the subject of such a consensus that it would appear irrelevant to discuss them. However, criticisms exist, but, appearing only in clinical publications involving health professionals, their critics are directed exclusively to self-care in children and adolescents.

This is particularly the case if we refer to the publications indexed in Medline in the rare cases where they address the topic of Self Care in Children and Adolescents

In these publications, they first wonder if self-care in children and adolescents is not above all sign of their neglect: Very representative of this current is the article entitled "Should we care about Adolescents Who Care for Themselves? What we have learned and what we need to know about youth in Self-Care" [2]. In this paper, the authors argue that Self-care would be an indicator of a failure of parental support except in very competent families. In other words, self-care should be seen primarily as a sign of the weak capability of the parents and their lack of ability to use the educational standards to help their children to deal with everything related to care. These results are consistent with Amartya Sen capabilities theory [3] and impose to avoid a diversion of the notion of self-care to mask the absence of suitable professional and non-professional help to the children and adolescents in need.

These publications question also the fact that in certain complex conditions, self-care is mainly directed towards the self-management of care and, that, in that sense, it is, above all, an attempt to reduce the risks linked to poor management of treatment, rather than a positive and desirable development. In the situations of children and adolescents with medically or socially complex chronic conditions, supporting self-management should be seen as a priority even if it remains far from the ideal of autonomy to which is referred the model we presented at the beginning of this paper [4].

By examining these two types of limitations of the concept of the ideal model of self-care, some authors were thus led to introduce the idea of a self-care distinction between universal self-care and health deviation self-care in children and adolescents: in entering in the details of the concept, they show that participants ap-

pear as competent agents in universal and developmental self-care requisites but need supportive-educative nursing interventions for health-deviation self-care [5].

Surprisingly, the studies on self-care in children and adolescents leave in the shade a question that is crucial when dealing with adolescents: the role of motivation in self-care. It is well documented that motivation is crucial in the effect of interventions aiming at behavioural changes, with data suggesting a greater influence of intrinsic motivation (internal motives) over extrinsic motivation (external motives).

In children and adolescents, the balance between these two forms of motivation is deeply affected by the alteration of the self/others balance which is crucial at various developmental stages. Psychological development can indeed be seen, at least partially, as a continuous journey from dependence to autonomy.

It is particularly the case in adolescence in which the adolescent is challenged by the necessity to become autonomous (that is to say to separate from those who supported him during his childhood); with, here, an additional difficulty due to the fact that this burning needs to become autonomous

occurs at the very moment in which the stress of the adolescence process increases his needs to be helped by his parents and or the other persons of his environment. It is a paradoxical situation that challenge the adolescent's capacity to deal with separation.

It is of course crucial because the most vulnerable Adolescent are those in which this capacity is the weakest and are additionally those who are the most reluctant to accept or ask for help, they would need, particularly regarding mental health. The problem is that they are also those who are the most likely to engage in problematic behaviours and the less likely to be self-care oriented [6].

Adolescence Psychiatry teaches us that in that type of situation (which is frequent in the field of mental health) the most efficient way to get out of this paradoxical situation is to find an interactive way to overcome the relational threat this situation triggers in the adolescent: his/her fear of dependency and his/her feeling of failure dependency induces in him/her. Educational mediations are considered generally as the most efficient tool for that stake because it reduces the challenge of the relation by masking it behind the pleasure of doing interesting and gratifying things. Notably, some of the normative proposals we mentioned at the

beginning of this brief note can be seen as non-asymmetrical educational mediations.

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Extreme Heat: A Guide for Health Professionals & Patients

Heat kills more people than floods, hurricanes, tornadoes, and earthquakes combined. This is why health professionals and their patients need to be aware of the dangers of heat and know the signs of heat exhaustion. Doctors and nurses can advise patients on how to protect themselves from heat's dangers. **The World Medical Association's** My Green Doctor this month provides a useful short guide (reading time 5 minutes): <https://mygreendocor.org/extreme-heat-a-guide-for-health-professionals-patients/>.

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well: <https://www.MyGreenDoctor.org/> or <https://www.MyGreenDoctor.es> (en español). **You can do this!**



Axe the Fax: Save Money & Lower Your Climate Footprint

It's time to take a step to abandon your fax machines. Your healthcare practice can reap large savings by ridding yourself of this outdated technology. With some simple steps, most offices in the world today can lower dramatically their fax burden, and some can eliminate it altogether. The World Medical Association's My Green Doctor this month provides a useful short guide. Reading time, five minutes: <https://mygreendoctor.org/axe-the-fax-save-money-and-lower-your-climate-footprint/>.

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that is saving clinics and offices money as they adopt wise environmental practices and share these ideas with their patients. This is how we can help prepare our patients for the health threats of climate change. Hundreds of offices, clinics, and bureaus of WMA members use My Green Doctor. It adds just five minutes to each regular office or clinic staff meeting. My Green Doctor explains what to say and do at each meeting so there is nothing for the office manager to study or prepare. Ask your manager to register today: <https://www.MyGreenDoctor.org/>.

If you are a leader in your national medical association, please add this message to your



organization's newsletter so that your doctors can enjoy this free membership benefit. To receive this e-newsletter announcement in a language other than English, simply contact My Green Doctor's Editor: tsack8@gmail.com.

