

Dangerous Rituals: Face Masks – More Harm Than Good

Description

This is a slightly modified version of an article that first appeared in Nexus magazine and the accompanying text to my contribution at the „Long Night of Masks“, the MWGFD Mask Symposium.

Face masks are nocebos

Face masks are extremely powerful, ubiquitous nocebos. Nocebos are psychological stimuli that cause harm via psychological, neurological or immunological processes.

Face masks, in fact, trigger fear. This is because their presence is coupled with the message: „A powerful killer virus threatens us always and everywhere! We must all protect ourselves!“ This message is a message of fear. For the very first public-media response to the pandemic was to spread fear [1]. Once fear is firmly installed, it is very quickly evoked again and again. The face masks are a visible symbol of the pandemic and psychologically conditioned stimuli that induce fear. And they do so extremely quickly and without our being able to resist them – because the emotional evaluation of sensory stimuli always occurs temporally *before* the conscious semantic analysis. This is because all sensory channels have an anatomically direct pathway to the amygdalae (sing. Amygdala), the small paired brain centres in the diencephalon responsible for threat evaluation. When „threat“ is registered there, the entire mental apparatus is primed to perceive, act and explore behavioural alternatives accordingly. Worse still, involuntary physiology, autonomic processes such as blood pressure regulation, heartbeat and immune modulation, is also affected accordingly.

How quickly and unconsciously this can happen is shown to us by a now famous psychological experiment conducted some years ago:

Unconscious nocebo effects

This experiment provides powerful evidence that key stimuli can trigger powerful effects even when we are not consciously aware of them [2]. The researchers combined the presentation of a particular face on a screen 50 times with a painful heat stimulus on the finger. Another face was combined 50 times with a very mild heat stimulus. This leads to what is called conditioning: an unconscious association of the visual perception of a particular face with pain in one case, or with no particular response in the other. This was followed by a test

© Prof. Harald Walach

sequence. In this, both faces were shown again and again combined with a heat stimulus. This time, however, it was equally strong for both faces, namely moderately strong. This means that for the face that was initially paired with a strong heat and thus pain stimulus, the heat stimulation was currently and objectively weaker, and for the face that had originally been paired with a low heat stimulus, the heat stimulus was now stronger. After the presentation of these test stimuli – which were all objectively equally strong – the participants were then asked to rate their pain perception on a scale. As was to be expected, those participants who had initially been shown the face with a strong heat stimulus rated their pain significantly and statistically strikingly higher, although the objective test stimulus was the same as in the other group. The participants who had initially been presented with the face paired with low pain stimulus rated their pain perception significantly lower.

This result is not surprising for experts: one can condition pain stimuli – we already knew that – and one can also condition on faces, i.e. also on comparatively complex perceptual objects. But it gets even better: In the test sequence mentioned above, the faces were shown for a relatively short time – 100 milliseconds, or a tenth of a second. That is very short, but it is enough to enable conscious recognition. That alone is remarkable from my point of view. But now, in a second run, the same sequence of faces was presented subliminally, for only 12 milliseconds. Since the 12 millisecond presentation of the face was overlaid by another visual stimulus immediately afterwards, there was also no visual afterimage left on the retina that could have continued to have an effect. So we are really dealing with subconscious perception running below the perceptual threshold. The same faces that had been presented under these conditions were again coupled with the same mean heat stimulus and participants were then asked to rate their pain.

Now comes the amazing part: The pain rating in this subliminal presentation was hardly different from the first series of tests, in which the faces were presented for longer and thus consciously perceived. The face originally paired with a stronger pain stimulus elicited a significantly larger and statistically striking pain perception, even in the subliminal perception condition, than the face that had originally been paired with a lesser pain stimulus. There was little difference in the magnitude of pain perception between the two conditions.

The experiment shows: psychological effects of conditioning are extremely robust and work even when the conditioned stimulus is presented for a very short time. In this case, the experiment was a so-called nocebo research experiment. The researchers investigated the extent to which a negative physical reaction – in this case pain perception – can be reliably triggered by psychological stimuli. We know from this and many other experiments that nocebo effects – psychological effects that manifest themselves physically in negative reactions – are very powerful and work very reliably [3, 4].

The psychological effects of face masks

The nocebo experiment described above shows us: perceptual objects, such as faces, are initially analyzed unconsciously and very quickly for their potential for danger or relaxation. This pre-conscious evaluation paves the way for the conscious evaluation of the perceptual object and alternative behaviour. The face mask is a threat signal. It has been coupled through myriad visual, unconscious and conscious processes with the fear narrative: „We are threatened by a deadly virus and must protect ourselves.“ This pairing of unconscious threat analysis and key fear stimuli, such as the perception of masks, solidifies the fear narrative, for one thing: „*The corona pandemic is a huge threat* to everyone.“

At the same time, the deliberate messages – „*Protect yourself and others. Keep your distance and wear a face mask!*“ – give the impression that we can do something about this fear by, say, putting on a face mask. In the jargon of psychology, this gives us an instrument of self-efficacy, something with which we can actively act against the threat. „*Thank God for these masks, otherwise we would be helpless against this virus! By wearing face masks, we can protect ourselves*.“ On a conscious level, this certainly leads to relief for many. Hence, mask-

© Prof. Harald Walach

wearing has become a ubiquitous fear-management ritual.

But because of the unconscious conditioning, it is at the same time a ubiquitous nocebo that constantly reignites the fear and keeps it alive. This is explicitly mentioned in an internal working paper forwarded to me by a colleague who works at the Spitzenverband der Krankenkassen. This is the association that represents all German health insurance funds to the outside world and maintains links to politics and to the doctors‘ associations. This paper, which was probably given into internal circulation at the beginning of July 2022, literally reads:

„*It should be noted that the wearing of masks also has a psychological effect, as masks are used in everyday life to draw ubiquitous attention to the potential danger of the virus. The mask has therefore become the ever-visible symbol of infection prophylaxis* (sic!) *and thus instilled vigilance in people*.“

The colleagues from the Spitzenverband have recognised and summarised this very well. What they have completely forgotten, however, are four things, which I will now go into in more detail:

1. The mask is only superficially a symbol of vigilance and a ritual of self-efficacy. Through conditioning, it has become a signal for fear.
2. Fear is one of the most powerful psychological immunosuppressants and extremely counterproductive in strengthening one’s defences against a pathogen. This effect is probably much more important overall than the negligible protective effect. Because:
3. Proof of a positive effect of face masks under everyday conditions (this is important!) has not yet been achieved.
4. On the other hand, it is well known and well documented in the scientific literature that masks have various direct negative effects, which I explain below. These are in addition to the indirect psychological effects with which I opened this text.

Masks, fear and immunosuppression

If there is any well-confirmed finding in psychoneuroimmunology, it is this: Anxiety and negative emotions activate the secondary stress axis [5]. The pituitary gland produces adrenocorticotropic hormone (ACTH), which activates the adrenal cortex. The adrenal cortex then releases cortisol. Cortisol has a long-term effect, increases the physiological stress level and is a potent immunosuppressor. It inhibits the activity of the immune cells that we need to remove the body’s own degenerated cells – including those infected by viruses – but also other invading material. The primary stress axis, which is triggered very quickly and operates via adrenaline (epinephrine) and noradrenaline (norepinephrine), has the task of increasing physical activation within milliseconds so that we can respond quickly to threats and dangers. It usually also activates the immune system. If the threat or stress lasts longer, then the second stress axis is activated, which is more designed to cope with longer-lasting stress, and this activation of the immune system is regulated back again. It is precisely this secondary stress axis that is activated by negative mental stimuli such as anxiety and depression. If the stress lasts for a very long time, exhaustion and strong immune suppression are the result. Most of us know this: when we are at the end of a prolonged period of stress, we often get sick and catch the flu or a cold. The pathogens are always around and in us – but they usually can’t harm us. However, if we are under a lot of stress and this second stress axis remains permanently activated, then our immune competence suffers, and we fall ill. Stupidly, this often happens at the beginning of the holiday or when we could be relaxing.

But this very process is now triggered by fear stimuli. And one of the strongest fear stimuli in this pandemic is the sign of omnipresent threat: the face mask. From the very beginning of the pandemic, reassuring communication would actually have been necessary to avoid precisely this immunosuppressive effect of fear. But with increasing fixation on the threat of a pathogen, we lost sight of what we really have positive control over:

© Prof. Harald Walach

strengthening the host factors, i.e. our immune competence, for example through relaxation, exercise, spending time in the fresh air, sufficient vitamin D intake. Vitamin D, just as an aside, does much more to clarify who dies from SARS-CoV2 than how many cases of the disease were observed [6]. In this sense, fixating perceptions and all actions on the pathogen and disregarding host factors is precisely the wrong public health strategy – the masks represent the pinnacle of this misguided thinking.

As I said, they are a psychological symbol of threat, triggering fear and thus producing exactly the opposite of what we actually need. Namely, they damage our immunocompetence. Therefore, the widespread attitude „no harm, better safe than sorry“ is wrong. Because fear stimuli always do harm and, above all, have a very stable unconscious effect.

The effectiveness of face masks in everyday life has not been proven to date

We must always distinguish between a medically clearly defined field of indication for wearing face masks and an everyday situation. Hospital hygienists, nurses and doctors receive very dedicated training on how to handle masks and how long they can wear them. In hospitals, staff and patients wear masks only under very specific conditions: during operations, after transplants or very severe therapeutic interventions. And even in this specific case of wearing with a clear time limit, it was found in a doctoral thesis that in surgical staff during an operation, the carbon dioxide content in the blood was increased after only one hour, because the mask impedes the exhalation of carbon dioxide and accelerates its rebreathing [7].

Mask-wearing in everyday life only became a common ritual in our country during the corona pandemic. How and why is incomprehensible to me. Because the data situation was already clear and extremely poor at the beginning of the pandemic. A competent overview by the renowned hygienist Prof. Kappstein already revealed at the beginning of the pandemic: There is no reliable evidence of a protective effect of face masks in everyday life, but a great deal of evidence of side effects – from carbon dioxide rebreathing to germs [8]. Why sober scientific evidence of the uselessness of masks for infection protection in everyday life was fought so emotionally and fiercely would be worth a separate investigation. Suddenly, all kinds of people, from ministers to state secretaries and party bigwigs to talk show hosts, were acting like specialists in hygiene. Wearing a mask now no longer became a sober measure, but a symbol of „political correctness“. It is reminiscent of wearing a beret in the 1960s. Back then, the beret was an expression of left-wing sentiment in memory of the guerrilla fighter Che Guevara. Today, wearing a mask is an expression of approval for the mainstream narrative of the corona pandemic: „ *The virus is deadly. Our political leaders protect us from it by telling us to wear masks and wearing them themselves. And I think that's good, so I'm going along with it.„*

Factually and soberly, there was no robust evidence then or now. The „rapid review“, which was conducted and published on behalf of the WHO, relied mainly on methodologically very poor observational studies [9] and even then came to the cautious assessment that efficacy was not well established and that randomized trials were needed. Nevertheless, it has been cited again and again as „evidence of efficacy“. No wonder. For it is really the only evidence. Already available on a preprint server and formally published immediately afterwards, however, was the systematic review by the working group around Tom Jefferson of the Oxford Center of Evidence Based Medicine [10]. It is important to know that this is a so-called Cochrane review. The reviews of the Cochrane Collaboration are generally considered to be the most robust, firstly because they conduct very thorough literature searches and really evaluate all material – including unpublished material – and secondly because they have developed very precise protocols of procedure that are followed by everyone who does such reviews. Jefferson and colleagues looked at randomized trials and other trials that were available at the time. They looked primarily at the effect of face masks on influenza because there were already a larger number of randomized trials on that.

© Prof. Harald Walach

Since the influenza virus is very similar in size and distribution to coronaviruses, this review can be considered authoritative. The review does not find any robust effects, certainly not in everyday life. In special medical situations with a high risk of infection – in hospitals, in nursing wards – a positive effect cannot be ruled out. But even there it has not been proven. A second working group, which had almost the same material available but included a few more studies, came to the same conclusion [11]. A very detailed review that summarizes all randomized studies and meta-analyses states: of 16 randomized studies, 14 are negative. Of 16 meta-analyses or reviews, 8 are critical and provide no evidence of effectiveness of masks and 8 are cautiously positive [12].

The requested randomised trial in the context of corona pandemic was finally conducted [13]. A Danish group randomly divided more than 6,000 participants into one group that received the recommendation to wear masks in everyday life – shopping, riding the underground, in shops; the others did not receive this recommendation. There was an extremely small, statistically insignificant effect: 42 in the recommendation group had a corona infection (1.8%) and 51 in the control group (2.1%). However, if one examined the people who had actually worn masks – because some in the control group also wore masks and not all in the recommendation group followed the recommendation – then one could see that among those who had worn masks more frequently, there was even a slightly increased tendency to develop corona. This was also not statistically striking.

The problem with modelling studies

In contrast, a whole series of experimental studies have been published which were then interpreted as evidence of efficacy for masks. The problem with all these studies: they do not work with realistic situations in everyday life, but use model situations. For example, a study by Cowling's research group in Hong Kong first identified people with respiratory infections, then randomized them to exhale and cough with and without a mask, and then measured the viral load in the exhaled air [14]. It is understandable that sick people exhale more viruses. That the masks reduce this viral load is also understandable. But it is no longer comprehensible that wearing a mask always and under all circumstances has a positive effect on healthy people and those without symptoms. For one thing, this effect must be weighed against the possible harm – more on this below. On the other hand, one has to consider who wants to protect themselves or others from what under what circumstances.

Masks do not protect us under everyday situations. This is because we always have viruses in the surrounding air. The idea that you can protect yourself from breathing in such viruses by wearing a mask is illusory. If it had been evolutionarily advantageous and possible to completely protect oneself from inhaling viruses, nature would have come up with appropriate devices. But it didn't. To be more precise, it has: namely our immune system. But it needs constant contact with the outside air and pathogens in order to function properly. The idea that preventing pathogen contact would be good for us overall is due to extremely limited and factually incorrect thinking.

But perhaps masks do protect others, as has often been argued. If I myself am walking around deathly ill, this modelling study by Cowling [14] may indeed provide an argument that a mask prevents viral load in my environment. But this is not an argument for a general mask requirement. After all, sick people do not usually walk around in trains and supermarkets. To protect the environment from sick people, it would be better to take measures to ensure that such sick people are properly cared for at home and do not have to go to supermarkets. This would be feasible, for example, through community services that help with shopping or errands. Making masks compulsory for the general public for this reason is like trying to protect people from burglars by forbidding them to leave their house.

Such modelling studies are generally useless for answering the question of whether wearing masks prevents illness. Wearing masks may prevent breathing off germs when you are sick yourself. Wearing masks may also prevent us from being confronted with an exorbitant viral load when we stand in front of the bed of a seriously ill person. But who does that in everyday life? And who meets a seriously ill person in everyday life at Aldi who coughs directly into your face? It's not impossible, but it's very rare. Sometimes hammers fall from scaffolding,

© Prof. Harald Walach

and very rarely do they hit an uninvolved pedestrian. Is that a reason to walk around town wearing crash helmets? Maybe on a via ferrata, but not in everyday life. It's the same with masks: they may well be helpful in special situations, but not in everyday life.

I will give two typical examples of much-cited modelling studies to illustrate the problem. The first study is from Japan and was cited as evidence for the effectiveness of masks in the early stages of the pandemic [15]. It was a main argument in a legal case in the US, cited by the US government in a letter. This study juxtaposed two artificial heads 25, 50 or 100 centimetres apart in an artificial enclosure, had one artificial head exhale virus-saturated air and measured the other with and without a mask and found drastic differences. What the reader only sees if he reads the study very carefully and also pulls the supplement from the net is

- that the artificial heads were placed in a small chamber 40 by 50 by 120 centimetres cubed
- that an extremely high viral load was simulated, as found in the terminally ill, and
- that the data were collected after half an hour of saturation of the air with such viral air.

It is fair to ask: what relevance do such data have to the normal situation in everyday life? And perhaps: what motivates researchers to construct such unrealistic scenarios, and to hide the fact that they are unrealistic so cleverly?

A final example: in year 2 of the pandemic, the University of Witten decreed that lectures could only be attended with FFP2 masks. This was also based on a modelling study [16], which allegedly proved that only FFP2 masks filter properly. If one looks at the study and asks how this model was calculated, one finds that the authors first cite another model on which they rely. That is also from their research group. So you have to dig up this study and you don't find the information you want there either. Because this study also quotes a third one from the same working group. Only there do you find that the working group used two case reports from the initial phase of the pandemic to define the viral load. One report comes from France, one from China. There, the viral load was measured in some terminally ill patients in intensive care. It is precisely this viral load, which is one of the highest values reported in the literature, that was now used to populate the model. That one then finds an effect of FFP2 masks is not surprising. But what is surprising is that one has to dig up this key piece of information through library archaeology and that the authors do not mention with a single word how unrealistic their model is.

The alleged „efficacy" of face masks is mainly based on such experimental studies. For example, the above-mentioned internal paper of the National Association of Health Insurance Funds cites an animal study proving the effect of masks on hamsters. Good for the hamsters. But none of these experimental studies is relevant to everyday situations, on the street, in the supermarket, in church, on trains or planes (where, by the way, excellent ventilation ensures rapid air exchange). And where such everyday situations have been studied, no effects are found that would justify legal regulations on mask-wearing.

The harmful effects of mask-wearing

Many people say, „It doesn't matter; if it doesn't help much, it doesn't hurt." But that is exactly wrong. Mask-wearing does harm, and it has been proven to do so. A good systematic review by Kai Kisielinski and colleagues summarized a total of 109 studies that looked at negative effects of face masks, 44 of them in the quantitative summary [17]. They find clear indications of harmful effects. The so-called MIES – mask-induced fatigue syndrome – is well known. It is caused by the fact that face masks hinder the inhalation of oxygen and increase the rebreathing of carbon dioxide. In the long run, this leads to an undersupply of oxygen. We all remember this from school, when 30 or 40 children sat in a classroom that was too small: We got tired, got headaches, fell asleep or had problems concentrating. That is the effect of excessive carbon dioxide.

© Prof. Harald Walach

My colleagues at Witten University conducted a large survey study in the very first year of the pandemic, covering about 25,000 mask-bearing children and their parents [18]. 68 percent of the children reported suffering from symptoms such as irritability, headaches, difficulty concentrating and others.

We measured the carbon dioxide content in the inhaled air of children wearing FFP2 and surgical masks in an experimental measurement study. We found carbon dioxide levels of about 13,000 parts per million (ppm) after only three minutes of mask wear [19]. It is important to know this: In outdoor air, the carbon dioxide content is about 400 ppm or 0.04 per cent by volume. Indoors, the upper limit of 2,000 ppm or 0.2 percent by volume is just about right; above that, there is a risk of health hazards, as the German Federal Environment Agency stated some time ago [20]. We see higher values by a factor of 6 in children. In adults, the values are somewhat lower because the dead space between their mask and face is smaller, and their breathing volume is larger. Therefore, they can breathe out the carbon dioxide a little better. But even in adults, various measurements have shown that the carbon dioxide content of the inhaled air under the mask is about a factor of 2 to 3 higher than the limit value of 2,000 ppm [21, 22].

Now you might say: „Well, a bit of headache and fatigue can still be put up with, if there might be a tiny protective effect after all.“ Personally, I think no: No. If a positive effect is not proven, but negative effects are well documented, then medical ethics and common sense dictate that an intervention should be left alone.

But the problem is even bigger: the masks would have to be handled very hygienically and cleanly and changed very often. Because otherwise they get germy. We breathe in and out bacteria and fungi all the time. Masks form a kind of retention reservoir. Hygienist Prof. Kampf points this out [23]. This means that just by breathing, a lot of germs collect in the tissue of the masks, are held there, can multiply in the warm and humid climate and are then breathed back. While we can easily cope with the few germs we carry or are confronted with during the normal breathing process, such an accumulation of germs in the mask can become quite problematic. Kampf cites a whole series of microbiological studies in his book that have measured germ proliferation under masks. It is considerable. This leads the hygienist to the conclusion: face masks are a major hygienic problem, but they do not prevent anything. This does not even take into account improper handling, which increases germs.

You would have to throw the masks away after each use, you would have to wash and disinfect your hands before putting them on, you would not be allowed to touch the inside of the masks, so you would have to use several masks per day if used properly, which is about 60-100 per month. Who exactly produces them then? 100 times 80 million makes 8 billion masks for the Germany alone. Per month. Or 96 billion per year. Who pays for them? Are they polluted? How are they disposed of? And even then there would still be no evidence of any benefit, at most some harm would be prevented. We can prevent this very easily: Namely, by not using them in the first place.

© Prof. Harald Walach

As far as I know, the secondary harmful effects have not yet been studied: for example, whether respiratory infections due to other germs – bacteria, fungi, other viruses – have increased as a result of mask-wearing. The massive effects of the corona pandemic on children, especially due to the omnipresent fear, have meanwhile been proven by a large number of studies. These are mainly due to the fear caused by mask-wearing, the reduction in contact with friends and the lack of social interaction [24]. Children rely primarily on non-verbal communication, which requires the perception of the entire face. But they are also immunologically dependent on the constant exchange of air with the environment so that they can build up the necessary immunocompetence. All this is massively hindered by wearing masks. The wife of a school friend of mine, who works in a children's ward in a hospital, recently told me that more and more children are being admitted with very severe illnesses. In these children, quite banal viral infections with adenoviruses get so out of hand that they have to be treated as emergencies, a phenomenon that had not been observed before. It is suspected that immunocompetence suffers as a result of the impeded normal pathogen contact in the course of the general compulsory masking.

All these are examples, poorly studied because ignored, of the secondary harmful effects that can come from mask-wearing. In addition, there are other indirect effects: The obstruction of normal social exchange in everyday life, which includes rapid, non-verbal communication; the smile while shopping, a quick word. The blocking mentality towards those who behave differently. The rise in anxiety, anger and general arousal levels. All these are, after all, very indirect consequences of a single commandment, little thought given to its consequences, namely to wear masks in everyday situations. We have subordinated everything else to a single rationality, namely protection from a supposed killer virus. In doing so, we overlook the fact that the effectiveness of this measure is anything but assured.

Conclusion

The risk-benefit balance for face masks is conceivably poor. The effect in everyday life has not been proven. The potential dangers, on the other hand, have. So it would be a matter of common sense to abolish the wearing of masks as a protective ritual.

This will not succeed so easily, and here we are back at our beginning: masks have now become a symbol, a symbol of the potential danger of the coronavirus, a symbol of political correctness and approval of the mainstream narrative. Those who wear masks declare: „*I have faith in politics. I believe the reality presented by the media. I believe that by wearing a mask, I am protecting myself and others. I do something for the common good. I am a good citizen*."

The mask also became a symbol of possible self-empowerment, known in psychology as „self-efficacy": I can do something for myself and my health. Because the virus is so dangerous and can lurk everywhere, people need to feel that the state and they themselves can do something to protect themselves. The face mask is such a supposed aid. On the one hand, it triggers fear because all the unconscious conditioning processes contribute to it. But it is also an instrument of self-protection on the conscious level. By putting on a mask, we can protect ourselves and others – so the narrative goes – from this deadly virus. Therefore, the mask also gives me a certain power to banish danger. The mask is a postmodern banishing ritual towards the invisible evil.

This also explains the aggressiveness with which media people, talk show hosts, politicians react to findings that denigrate their favourite weapon in the fight against the pandemic, the mask. If we are not supposed to use the mask because it does not help and harms, what are we supposed to do? Then we are helpless against the evil virus! This also explains why even quite normal and reasonable people become aggressive and vicious when others next to them don't have a mask on, on the train, in the supermarket, in the tram. Because people now feel that the only thing they can really and effectively do against infection is to wear masks and follow the other

© Prof. Harald Walach

corona rules. This supposed self-efficacy is very well fixed in people through all kinds of propaganda.

When I wear a mask, I am doing something for myself and others, one might think. It is a perfidious deception. Because instead of doing something good for oneself and others, the opposite happens: one consolidates the fear narrative, triggers fear again and again and thus gives one's own and others' immune systems a blow below the belt. The stupid thing is: these effects happen unconsciously, we don't notice them. They happen even when, in our conscious estimation, we are proud of our bourgeois-brave behaviour and think we are doing something good for ourselves and others. We wear masks and still get sick.

I have spoken to some people who have said phrases like, „I wear masks a lot and pay attention, and still get sick." I usually say in response, „Maybe not in spite of it, but because of it?"

I am therefore decidedly of the opinion that anyone who forces others by rules and regulations to wear face masks in everyday life – in shops, trains, at school or in the supermarket – is not helping anyone and is basically committing bodily harm. For they are enforcing a measure that demonstrably does little good but a lot of harm.

Whoever claims otherwise should back it up with robust data. I have shown here that this will not be so easy. For there is plenty of robust data to support my assessment. Stupidly, propaganda has led to a reversal of the burden of proof. Normally, the one who wants to introduce something new has to prove that this is better and unproblematic. In medicine, the rule is: New interventions must prove their harmlessness and effectiveness, all the more so the wider their application and the higher the potential for harm. Critics are now being asked to prove their point. Topsy-turvy new world.

But, I know, it's not about facts and realities, it's about faith and a new form of religion. What used to be the holy water, the candle, the blessing is now the mask. Holy water, candle and blessing were not harmful. Masks are.

Sources and literature

1. Walach H. Die Coronakrise, die sozilae Konstruktion von Fakten und ihre Konsequenzen. In: Bruder K-J, Bruder-Bezzel A, Günther J, editors. Corona – Inszenierung einer Krise. Berlin: Sodenkamp & Lenz; 2022. p. 287-312.
2. Jensen KB, Kaptchuk TJ, Kirsch I, Raicek J, Lindstrom KM, Berna C, et al. Nonconscious activation of placebo and nocebo pain responses. Proceedings of the National Academy of Science. 2012;109(39):15959-64. http://www.pnas.org/content/109/39/15959.
3. Meissner K. Vermeidbares Leid: Noceboeffekte und die COVID-19-Pandemie. Complementary Medicine Research. 2021;28(2):87-8. doi: https://doi.org/10.1159/000515848.
4. Colloca L, Barsky AJ. Placebo and nocebo effects. New England Journal of Medicine. 2020;382(6):554-61.
5. Schubert C. Psychoneuroimmunolgie und Psychotherapie [Psychoneuroimmunology and Psychotherapy]. 2. Aufl. ed. Stuttgart: Schattauer; 2015.
6. Klement RJ, Walach H. Identifying factors associated with Covid-19 related deaths during the first wave of the pandemic in Europe. Frontiers in Public Health. 2022;6th July 2022. doi: https://doi.org/10.3389/fpubh.2022.922230.
7. Butz U. Rückatmung von Kohlendioxid bei Verwendung von Operationsmasken als hygienischer Mundschutz an medizinischem Fachpersonal [Respiration of carbon dioxide when using surgical mask as hygienic mouth covering in medical personnel]. München: Technische Universität München; 2005.
8. Kappstein I. Mund-Nasen-Schutz in der Öffentlichkeit: Keine Hinweise für eine Wirksamkeit. Krankenhaushygiene up2date. 2020;15(03):279-97. doi: https://doi.org/10.1055/a-1174-6591.

© Prof. Harald Walach

9. Chu DK, Akl EA, Duda S, Solo K, Yaacoub S, Schünemann HJ, et al. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. The Lancet. 2020;395(10242):1973-87. doi: https://doi.org/10.1016/S0140-6736(20)31142-9.
10. Jefferson T, Del Mar C, Dooley E, Ferroni E, Al-Ansari LA, Bawazeer G, et al. Physical interventions to interrupt or reduce the spread of respiratory viruses. Cochrane Database of Systematic Reviews. 2020;CD006207.pub5. doi: https://doi.org/10.1002/14651858.CD006207.pub5.
11. Xiao J, Shiu EYC, Gao H, Wong JY, Fong MW, Ryu S, et al. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings – personal protective and environmental measures. Ermerging Infectious Diseases. 2020;26(5):967-75. doi: https://doi.org/10.3201/eid2605.190994.
12. Liu IT, Prasad V, Darrow JJ. Evidence for community cloth face masking to limit the spread of SARS-CoV-2: A critical review. Washington DC: Cato Institute, 2021 Contract No.: 8 Nov 2021.
13. Bundgaard H, Bundgaard JS, Raaschou-Pedersen DET, von Buchwald C, Todsen T, Norsk JB, et al. Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers. Annals of Internal Medicine. 2020;174(3):335-43. doi: https://doi.org/10.7326/M20-6817.
14. Leung NHL, Chu DKW, Shiu EYC, Chan K-H, McDevitt JJ, Hau BJP, et al. Respiratory virus shedding in exhaled breath and efficacy of face masks. Nature Medicine. 2020;26(5):676-80. doi: https://doi.org/10.1038/s41591-020-0843-2.
15. Ueki H, Furusawa Y, Iwatsuki-Horimoto K, Imai M, Kabata H, Nishimura H, et al. Effectiveness of Face Masks in Preventing Airborne Transmission of SARS-CoV-2. mSphere. 2020;5(5):e00637-20. doi: https://doi.org/10.1128/mSphere.00637-20.
16. Bagheri G, Thiede B, Hejazi B, Schlenczek O, Bodenschatz E. An upper bound on one-to-one exposure to infectious human respiratory particles. Proceedings of the National Academy of Sciences. 2021;118(49):e2110117118. doi: https://doi.org/10.1073/pnas.2110117118.
17. Kisielinski K, Giboni P, Prescher A, Klosterhalfen B, Graessel D, Funken S, et al. Is a Mask That Covers the Mouth and Nose Free from Undesirable Side Effects in Everyday Use and Free of Potential Hazards? International Journal of Environmental Research and Public Health. 2021;18(8):4344. doi: https://doi.org/10.3390/ijerph18084344.
18. Schwarz S, Jenetzky E, Krafft H, Maurer T, Martin D. Coronakinderstudien „Co-Ki“: erste Ergebnisse eines deutschlandweiten Registers zur Mund-Nasen-Bedeckung (Maske) bei Kindern [Corona children studies „Co-Ki“: First results of a Germany-wide registry on mouth and nose covering (mask) in children]. Monatsschrift Kinderheilkunde. 2021;169:353-65. doi: https://doi.org/10.1007/s00112-021-01133-9.
19. Walach H, Traindl H, Prentice J, Weikl R, Diemer A, Kappes A, et al. Carbon dioxide rises beyond acceptable safety levels in children under nose and mouth covering: Results of an experimental measurement study in healthy children. Environmental Research. 2022;212:113564. doi: https://doi.org/10.1016/j.envres.2022.113564.
20. Umweltbundesamt. Gesundheitliche Bewertung von Kohlendioxid in der Innenraumluft [Health assessment of carbon dioxide in air within closed rooms]. Bundesgesundheitsblatt – Gesundheitsforschung – Gesundheitsschutz. 2008;51(11):1358-69. doi: https://doi.org/10.1007/s00103-008-0707-2.
21. Rhee MSM, Lindquist CD, Silvestrini MT, Chan AC, Ong JJY, Sharma VK. Carbon dioxide increases with face masks but remains below short-term NIOSH limits. BMC Infectious Diseases. 2021;21(1):354. Epub 2021/04/17. doi: https://doi.org/10.1186/s12879-021-06056-0. PubMed PMID: 33858372; PubMed Central PMCID: PMCPMC8049746.
22. Martellucci CA, Flacco ME, Martellucci M, Violante FS, Manzoli L. Inhaled CO_2 concentration while wearing face masks: a pilot study using capnography. medRxiv. 2022:2022.05.10.22274813. doi: https://doi.org/10.1101/2022.05.10.22274813.
23. Kampf G. Wissenschaft ist frei. Auch in der Pandemie? Hamburg: tredition; 2021.
24. Stavridou A, Stergiopoulou A-A, Panagouli E, Mesiris G, Thirios A, Mougiakos T, et al. Psychosocial

© Prof. Harald Walach

consequences of COVID-19 in children, adolescents and young adults: A systematic review. Psychiatry and Clinical Neurosciences. 2020;74(11):615-6. doi: https://doi.org/10.1111/pcn.13134.

Date Created
24. Oktober 2022

© Prof. Harald Walach