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Posted Date: 26 March 2024

doi: 10.20944/preprints202403.1576.v1

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Article

“The Right to Our Own Body Is Over”: Justifications of COVID-19 Vaccine Opponents on Israeli Social Media

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Abstract: Vaccines decrease morbidity and mortality. Nevertheless, their benefits depend on public response. During COVID-19, vaccine hesitancy and refusal were rampant, threatening public health. To address the diffusion of unreliable information on social media and prevent vaccine hesitancy from developing into vaccine refusal, a thorough understanding of the opponents' arguments is required. Accordingly, the article examines vaccine opponents' justifications on social media. Textual content analysis of reader comments on three health-related Israeli Facebook pages was conducted. Data collection encompassed the Israeli COVID-19 vaccination period from October 2020 to May 2022. The comments were analyzed according to the health beliefs model (HBM). We found that vaccine opponents were characterized by low perceptions of the severity of the disease combined with high perceptions of the damages of the vaccine; low perceived benefits of vaccine compliance; vaccine hesitancy and fear along with public distrust as barriers to change; and call for action to resist the vaccine and spread related anti-establishment views on the web. As vaccination hesitancy was found to develop into public distrust in the state systems and escalate into conspiracy beliefs and anti-vaccination activism, its early detection may prevent future vaccine resistance.

Keywords: vaccine hesitancy; vaccine opponents; COVID-19; public trust; health behavior; health beliefs model (HBM); social media; reader comments; Israel; conspiracy theories

1. Introduction

Vaccines form an important element in the prevention of morbidity and mortality and in the promotion of public health [1,2]. The literature emphasizes the significance of vaccines in improving the quality of life, restricting the distribution of infectious diseases, preventing disabilities, and saving lives [3]. However, despite huge progress in vaccine development over the past century, in order to maximize the benefits of vaccinations, accomplish herd immunity, and prevent outbreaks of preventable diseases, public cooperation is needed [2–4].

This aspect creates difficulties because, alongside the development of vaccines over the years, fear of them has also grown. Many people are reluctant to or even refuse to be vaccinated, viewing them as unnecessary or unsafe. Thus, despite vaccines' wide availability and public campaigns to encourage vaccination, vaccine hesitancy and refusal are rampant [5–8]. This represents a serious threat to public health [9,10] as it may lead to a decline in herd immunity and to outbreaks of preventable diseases [2,10]. The phenomenon is relevant to all vaccinations, but most recently to COVID-19 [4,11], thus presenting an important public concern that deserves further study.

Various elements have contributed to the rise in vaccine hesitancy and refusal with respect to the recent pandemic. They include “traditional” ones, such as fears regarding vaccine safety, religious and personal beliefs, philosophical principles, and the wish to receive additional information about the vaccine. In addition, during the COVID-19 pandemic, anti-vaccine attitudes spread rapidly because of the urgency of developing a new vaccine [12]. COVID-19 vaccines raised vaccine hesitancy

due to their innovative character, lack of information regarding their safety, the use of accelerated protocols to approve them, and, accordingly, fears regarding side effects that may only be discovered after some time [6,7].

In March 2020, following the global COVID-19 outbreak, the World Health Organization (WHO) declared it a pandemic [13,14]. Israel was among the first countries to start vaccinating against the disease in December 2020 [1,7]. The vaccine was initially given to the elderly population (60 and above) and medical personnel and then gradually to younger age groups. By March 2022, 66.5% of the Israeli population have been vaccinated twice, 48.6% have been vaccinated three times, and 8.2% have been vaccinated four times [1]. According to the Israeli Ministry of Health (MOH), the vaccination rates among the Jewish population were even higher, with 86% receiving at least one vaccination by February 2021, as opposed to 51% among the Arab population [7].

However, Israel also experienced manifestations of vaccine hesitancy and refusal, as was the case in other countries [15]. As mentioned above, public trust in vaccines' effectiveness and safety was shaken during the pandemic due to the urgency created in the vaccination's approval process, the lack of information about their safety, and the uncertainty around how to deal with the new disease [7,8]. Furthermore, the lack of trust in the healthcare system and the government was fueled by conspiracy theories. These theories blamed the authorities for concealing the vaccines' side effects, denying full information about the vaccines' components, or fostering covert relationships with the firms that produce the vaccines and profit from their distribution. Distrust was also increased due to the perception of the information provided by medical teams as unreliable and outdated. These misperceptions were based, among other things, on the public's search for information on general websites and social media platforms, where they were exposed to unprofessional, unreliable, and misleading information [8,16].

The literature highlights the influence of the media and social media on decision-making about vaccination [17]. Studies of common topics found in anti-vaccine posts show that they provide biased scientific information, political arguments focusing on freedom of choice, distrust of the medical community, conspiracy theories, and personal information related to negative vaccine experiences [18]. Compared with traditional media channels, social media allows the distribution of unvalidated ideas and messages, and unfounded data that could easily be presented as "scientific" [12,19,20].

Moreover, studies show that false information spreads through social media even faster than verified data. For example, an examination of anti-vaccine arguments that were posted on Twitter and Facebook found that emotional tweets and posts could be more meaningful than epidemiological testimonies [19]. Alongside evidence that the distribution of biased information may raise vaccine hesitancy and refusal, this exacerbated the phenomenon [12,20].

Accordingly, examining the discourse of vaccine opposers on social media and the justifications they use is essential. As for the focus on the COVID-19 vaccines, although the pandemic is officially over, it is essential not to forget the lessons that can be learned from it for similar future cases [21]. Studies have shown that anti-vaccine posts on social media may facilitate anti-vaccination behavior [19] and that tendencies of vaccine hesitancy and rejection are related to belief in conspiracy theories [8,22,23]. These aspects, along with the prevalent use of vaccine opposers in social media platforms to share their worldviews [12], indicate the importance of studying the characteristics of the discourse in these platforms.

For this reason, the current study analyzed the justifications used by Israelis who have decided not to be vaccinated and who spread their anti-vaccine attitudes via social media. These justifications were analyzed according to the health belief model (HBM) [24,25]. According to HBM, individuals will take a particular action regarding their health based on their beliefs and perceptions, divided into five components: perceived susceptibility to the disease; perceived severity of the disease; perceived benefits of preventative action; perceived barriers to preventative action; and health motivation (urge for action) [1,24,26]. HBM served as the theoretical basis for analyzing the vaccine opposers' justifications, as those were seen in reader comments found on three Facebook pages concerning public health. The study aimed to identify types of comments representing the anti-

vaccination stance. The research question was: What are the main justifications for opposing the COVID-19 vaccine, as seen in readers' comments on social media?

Previous studies have shown the influence of public knowledge about COVID-19 vaccination and the disease on people's tendency to adopt and apply government guidance [27]. These quantitative studies have examined the relationships between the perceptions and knowledge prevalent in the population, the sources of information, and vaccine hesitancy [27,28]. Data have shown that individuals' views of varied positive or negative information influence their understanding and determine their decision to be vaccinated [27]. They found a significant relationship between the knowledge about the COVID-19 vaccines and the perceived severity of the disease. They highlighted the impact of disseminating reliable knowledge on public attitudes regarding the disease and the vaccination [27,28].

Studies of this kind highlight the importance of providing reliable and accessible information about the safety of COVID-19 vaccines to accelerate vaccination and minimize hesitancy [28]. However, they are limited in examining the characteristics and kinds of information and knowledge the public meets. The current case study asked to present this information and knowledge by examining vaccine opponents' justifications on social media. Thus, the study will ask to examine what characterizes the positions, attitudes, and worldviews of individuals opposed and hesitant to vaccines in practice. This aim requires a qualitative study, which can examine the types of justifications and explanations vaccine opponents give.

2. Materials and Methods

The study examined the justifications vaccine opposers in Israel use when spreading their stance regarding COVID-19 vaccine refusal. For this purpose, we conducted qualitative social media content analysis [29], focusing on reader comments from three public Facebook pages.

2.1. The Facebook Pages

To gather as rich and varied data as possible, we analyzed reader comments from three Facebook pages reflecting three different stances regarding vaccination. The first was the official Facebook page of the Israeli MOH, selected to examine comments relating to the official information provided by the state. A pilot study found that this page included comments both for and against vaccination and could serve as an adequate basis for documenting comments referring to the instructions and recommendations presented by the health authorities.

Two additional pages were selected to represent two ends of the spectrum between supporters and opponents of the vaccination policy. The first was the Facebook page of an NGO called Mida'at ("Informed") [30], established before the pandemic for the purpose of making reliable scientific information available to the public; as such, it dealt with health-related issues to "identify and correct misleading or incorrect information published in different media websites and on the internet" [30]. The NGO dedicates much of its public activity to disseminating reliable information about vaccines out of an express commitment to presenting scientific knowledge. Its website includes an information center regarding COVID-19, a link to a Facebook group called "Talking about Vaccines," and information sources regarding childhood vaccinations, hygiene, and additional aspects of public health. The website features the slogan "Together we will end fake news: For a healthier society," and on its homepage, it is written that "This is the first Israeli website that meets World Health Organization criteria and is included in the vaccine safety net" [31].

Finally, we examined talkbacks found on the Facebook page of a group called "The Israeli Public Emergency Council for the COVID-19 Crisis" (PECC) [32]. This is an independent association of doctors, researchers, and social welfare professionals who came together after the emergence of the COVID-19 pandemic to criticize the way the state managed the crisis. This group was opposed to the social distancing restrictions imposed during the pandemic and viewed the Israeli vaccination policy as coercive and violating people's rights. According to the organization's website, PECC was established by people who decided they could "no longer remain silent in the face of the manner in which the COVID-19 crisis is being handled" [32]. The website emphasized the presentation of

information regarding the side effects of the COVID-19 vaccines and the negative consequences of the policy implemented for coping with the disease more generally. For example:

"If you have been affected by the government's restrictions or believe that the COVID-19 policy compromises democracy, if you have experienced side effects following the vaccine and did not find a sympathetic ear, if you feel that you and your children are experiencing unfair pressure, if you believe that we must all get our lives and routines back, join us. Only if we unite can we return our country to a path of health and sanity" [32].

2.2. Data Collection and Analysis

We collected reader comments from the beginning of the vaccination operation in Israel in October 2020 until the end of most social distancing restrictions in May 2022. Within this range, we located comments on posts dealing with COVID-19 vaccines using the keywords "Corona" (the common name of the disease in Israel), "Corona vaccine," and "COVID-19". In total, comments were collected from 255 news items and posts (93 news items on the Facebook page of the MOH, 75 news items on the page of Mida'at; and 87 news items on the PECC page). We first collected all reader comments relating to COVID-19 posts. We kept the ones that included a negative response, questions regarding vaccinations, or expressions of vaccine hesitancy or refusal. These comments were saved and categorized into subgroups according to the principles of qualitative content analysis [26].

The reader comments were categorized based on HBM [33,34] and informed by the principles of thematic analysis [21,35]. The categorization proceeded in several stages. First, to create preliminary acquaintance with the characteristics of the comments we collected, we read and reread them, intuitively dividing them into different types (questions regarding the vaccinations' safety, comments mentioning conspiracy theories, stories and/or fears about vaccines' side effects, questions regarding specific populations such as pregnant women, etc.). The three research group members independently read the comments, divided them into categories, and then compared each of us' categories. Next, the themes identified in the first stage were examined vis-à-vis HBM. As mentioned by Gächter et al. [14] this dual-coding approach helped to minimize bias and enhance the reliability of the analysis.

2.3. Ethics

The use of empirical data appearing online creates ethical dilemmas and challenges related to participants' privacy, informed consent, anonymity, and confidentiality [36]. In the present study, analysis of reader comments was only carried out on public Facebook pages rather than closed private groups. Moreover, the researchers analyzed the texts while preserving the writers' privacy and without using any personal information, even when the writers themselves chose to reveal it. The study was approved by the Yezreel Valley College Ethics Committee (app. No. YVC EMEK.2023-12).

3. Results

The findings below are presented according to the HBM model, painting a complex picture of the uniqueness of the social phenomenon created by the COVID-19 pandemic: vaccine opponents.

Theme 1: "A greater threat than the virus": Perceptions of Disease Damage

This aspect represents individuals' beliefs regarding the likelihood of contracting a certain disease or possible damage due to a particular health-related behavior or its avoidance [34]. Analysis of the texts demonstrates a low belief on the commenters' part that they would contract COVID or that their health situation would deteriorate as a result. For example:

"If contagion were so great, we would already be with no transportation. Think about drivers who are so close to people when driving a bus. There are many questions in general regarding this" (PECC, December 2021).

Moreover, with the perception of a low likelihood of contracting the disease, there is an assumption that the vaccine, which had been approved in an expedited process with no long-term testing of its effectiveness and safety, could cause greater harm. The low level of fear of contracting COVID-19 and the high level of fear of the vaccine are apparent in the following comment:

"Over 100 lawyers have mobilized for the fight against child COVID-19 vaccinations, grounding their arguments in the medical professional basis PECC presented. They claim what we all know—there is no emergency situation in Israel; thus, we should not use a vaccine that had only received emergency approval. The vaccine presents a greater threat than the virus" (PECC, June 2021).

The wish to disseminate the fear of the vaccine among the public is evident in *Testimonials Project – The Movie*, which appeared online several months after the beginning of the COVID-19 vaccinations [37]. It included segments of interviews with people talking about negative side effects following the vaccine. The film website, often linked to Facebook pages where vaccine opponents were active, presented it as follows:

"This testimonial project was conceived to provide a platform for all those damaged by the COVID-19 vaccine and give them a voice that Israeli media does not. We hope the project will encourage more and more people to tell their stories".

A commenter who shared this film website wrote, addressing the MOH:

"It will do you no good, as there are so many testimonies regarding side effects and direct damage resulting from your injection that [they] will flood the country like a boomerang, a great tsunami; you cannot fight reality" (PECC, July 2021).

Theme 2: "It's only the flu": Perceptions of Disease Severity

The HBM model also relates to individuals' perception regarding the severity of a disease or health-related condition in terms of its effects on health and social life [34]. Content analysis regarding this aspect yielded two different perceptions: the severity of the disease and the severity of the vaccine's implications. Among the commenters, the *severity of the disease* was perceived as low to non-existent (to the point of believing that COVID-19 itself did not exist). For example:

"It's only the flu with good public relations" (MOH, July 2021).

"An invented virus [...] whose existence hasn't been proven, and emotional assumptions with no factual basis. A group of irresponsible people, greedy and power-hungry, who can only create trash science covered up by cruel arrogance" (MOH, December 2021).

Another comment was written on the day of the official announcement by the MOH regarding the Omicron strain:

"There's no morbidity and no Omicron. You invented a word to market the vaccine" (MOH, December 2021).

Moreover, even when short videos with testimonies regarding hospitalized patients and the destructive implications of vaccination refusal were uploaded, the readers' comments often demonstrated extreme distrust in the authorities. For example, a post uploaded to the MOH Facebook page with a short video showing testimonies of medical personnel from the COVID-19 wards received comments such as:

"The lower public trust gets, the more you try to frighten the public to control it."

"This disease is so dangerous that you must keep producing ads and campaigns. And I'm thinking – who are these zombies watching this today and swallowing this made-up video?"

"I'm watching the video and thinking that I no longer believe a single word you utter, Ministry of Health" (MOH, February 2021).

As suggested, there was also evidence of high perceptions of the *severity of the vaccine's implications*:

"Enough lies. We don't believe you. The hospitals are full of vaccine victims. You have ruined people's health and their lives, not to mention the rise in mortality since the vaccines have been introduced. Ask the undertakers. I've read quite a few testimonies of people who had been hospitalized or whose families had been, reporting that the wards are full of vaccine victims" (MOH, May 2021).

According to MBH, the perception of disease damage, combined with the perception of disease severity, form the perception of *disease threat*. In-depth examination of the comments demonstrates a very low-level perception of disease threat regarding COVID-19, along with high perceptions of the vaccine, which has become a separate threat focus.

"[...] In the fall or winter, they will continue vaccinating us. And it will be ten times worse. If they haven't forced us to become annihilated until now, in two or three months, there will be a mandatory vaccination law and detention centers for the opponents. The same [Prime Minister] Bennet mentioned this once: "Recuperation Facilities" (PECC, August 2021).

The identification of vaccination with annihilation is deliberate, representing a heightened threat perception related to the vaccine rather than to the disease.

Theme 3: "You should be ashamed of yourselves!" Perceived Benefits

This part of the model relates to the benefits of health-related behavior, as perceived by the individual, compared to the effort invested in changing that behavior [34]. Analysis of the readers' comments regarding this topic demonstrates that many did not see any benefit in vaccinating. The morbidity waves reinforced this perception, which rose following vaccination periods, particularly between December 2021 and February 2022, when the Omicron strain broke out. Vaccine opposers perceived the Omicron wave as proof of the vaccine's ineffectiveness, as despite a third vaccine round, the contagion waves did not subside:

"News flash... my children aged four and six have been positive since Sunday, completely non-symptomatic, and my husband and I, who have been vaccinated three times, are sick and symptomatic (MOH, February 2022).

This comment received many likes and supporting verbal responses, such as "It's exactly the same for us!!!".

Another expression of the low perceptions of vaccine benefits was the many negative responses to a MOH publication titled "The Green Pass is Life" (September 2021). The Green Pass, granted to vaccinated individuals, represented an attempt to create contagion-free environments by restricting entry to certain public places to pass holders. The pass allowed its holders freedom of movement while restricting non-vaccinated individuals. The latter's responses were harsh, reflecting a deterioration in public trust. For example:

"The Green Pass is life?!?!? You should be ashamed of yourselves. There's no forgiveness for the crime you are committing!!! Life is eating right, breathing right, and not being under constant strain because there is a heavy cloud above you forcing you to participate in an experiment that received [only] emergency authorization!!! My uncle received three vaccines and infected half my family over the holiday, and they are not vaccinated... So how does the Green Pass help?!" (MOH, September 2021).

Another respondent wrote:

"It seems that most vaccinated people with the Green Pass have gotten sick and passed the disease on to healthy people!! It's a shame that you need another vaccine every six months, and it still doesn't prevent contagion!!" (MOH, September 2021).

Another reader comments:

"In addition to driving people apart, there is nothing here! I know people who have all the vaccinations and have contracted the disease more than once and others who are not being vaccinated who never got it!! Both vaccinated and non-vaccinated people can pass the

disease to others, so it's completely unclear what's behind all this nonsense you've said here" (MOH, September 2021).

These reader comments derive from learning and data collection processes rather than sheer ignorance. Thus, some vaccine opponents perceive themselves as knowledgeable and acting based on informed choice.

Theme 4: The drug industry is run like a giant corporation": Perceived Barriers to Change

This aspect relates to perceived barriers to health-related behavioral change, which, when seen as significant, may prevent an individual from adopting the recommended behavior (in this case, vaccine compliance) [34]. Analysis of the reader comments exhibits two types of barriers – emotional and cognitive. *Emotional barriers* are related to fear of the new vaccine and its side effects. For example, this is a comment on a post encouraging vaccination:

"Facial paralysis, diarrhea, damage to the heart muscle, damage to the placenta for women, you're liars, you'll pay for this, shitheads" (MOH, December 2021).

Cognitive barriers are expressed through distrust of the establishment. This can be seen in people's words, treating representatives of the political and healthcare establishment as criminals hiding information regarding the harsh implications of the vaccine. For example:

"I've met vaccinated people, seen side effects with my own eyes. I'm not getting vaccinated!!! I'm not your lab rat. Lying criminals" (PECC, September 2021).

Another comment on a post in *Mida'at* (May 2021) presented the often-repeated claim that citizens distrusted the authorities due to the feeling that no serious examinations had been carried out to ascertain the vaccines' side effects:

"It's really great that in Europe and the US, they stopped the vaccinations and checked. Here, despite cases of myocarditis, they didn't stop anything to check. Also, regarding post-vaccination paresthesia, many doctors claim that it's due to anxiety, and some still do. People would have gained more trust if the Ministry of Health had treated these phenomena properly. Also, pay attention to the fact that for two months, they didn't post presentations of side effects".

Another comment on the same post read as follows:

"Is there any reason they don't publish updates for the follow-up on post-vaccination side effects in Israel? The last report was published on March 1, 2021 (more than two months ago), and did not include a proper, separate, emphasized section regarding post-vaccination cardiac and neurological phenomena".

Moreover, some of the readers' comments related to the economic interests supposedly motivating the vaccination campaign:

"The drug industry is run like a giant corporation raking in billions and employing people who engineer our consciousness and fear who have taken over the media... and along the way, it manages to recruit little politicians who accumulate control and power over a weak, tired population... which is willing to take drugs only so they can feel free... even if it's at the expense of the freedom to choose what to put into their bodies.... "(PECC, April 2021).

A similar comment elsewhere read:

"Unfortunately, the doctors have sold themselves to the government and the drug companies. I have no trust in you. There are more questions than answers regarding the disease and the vaccine" (MOH, February 2021).

According to the last two comments, distrust in the MOH system was related, among other things, to the perception that Pfizer and other pharma companies had "bought" doctors and MOH officials. Thus, the commenters were suspicious of doctors advising them to vaccinate. For example, in November 2021, the MOH uploaded a 24-second video showing a pediatrician talking about the claim that COVID-19 vaccination led to myocarditis. In response, a commenter wrote:

"Instead of putting a doctor reading from a prompter here, start publishing data. Prove that there's no rise in the rate of cardiac cases among young people compared to previous years". (MOH, November 2021).

Thus, whereas distrust was initially related to managing the COVID-19 pandemic in general, later on, the opponents perceived the vaccine as a tool for controlling the population and promoting economic interests. It was even associated with conspiracy theories regarding totalitarianism. For example, one reader commented on a German study which found encouraging data regarding child morbidity and hospitalization:

"Thank you, PECC. It seems that world governments have fallen in love with the pandemic. I've decided it's all done intentionally, and there's no way back. The trend is global totalitarianism. It's amazing how most doctors and journalists worldwide collaborate with this" (PECC, December 2020).

This comment represents an extreme group of vaccine opponents claiming that the management of the COVID-19 pandemic, or even its very outbreak, was deliberately designed to eliminate democracy and deny individual freedoms and a move towards a global totalitarian government. For example:

"You, all the doctors and professors who studied at the different academies, following the years in those academies, your brains have shrunk so much that you can't understand that there's such a thing as a conspiracy. And what is happening today is one big conspiracy against us. There's no connection between what is happening here and our health that we've already understood. This is an attempt to gain control and turn Israel into a fascist digital dictatorship" (PECC, December 2021).

Theme 5: "Nothing will break us!" Urge for Action

Fear of the vaccine's side effects, together with the assumption that ulterior motives govern the pandemic management, have led vaccine opponents to take active action against the establishment and its health instructions. In HBM terms, this aspect, urge for action, relates to any stimulus which will assist individuals in changing their behavior, whether it is a personal or family health-related situation, or the social environment [34]. In our case, motivation for action seems to work backward, leading not to vaccine compliance but rather to vaccine opposition. Moreover, this opposition is active, with opponents seeking to influence others.

This opposition developed together with the development of the vaccination campaign, intensifying with time as recommendations for additional vaccine doses were given, peaking when children were included in the campaign. The abovementioned Green Pass caused great anger, clearly broadening the circle of opposition, and intensifying active opposition, so much so that some referred to the Green Pass the "Green Patch", in reference to the yellow patch Jews were forced to wear during the Holocaust:

"The Jewish State is the only one using this fascist selection badge you call a Green Passport. Israeli MOH, you will be remembered in infamy" (MOH, May 2021).

The use of Holocaust-related symbols in the Israeli context indicates the extreme opposition to the measure in question, as it is considered taboo.

In addition, vaccine opponents saw the Green Pass as a symbol of the coercion, exacerbating the existing social distancing restrictions:

"This Green Patch is shameful. It doesn't really work in practice. It's only to make people get vaccinated, and anyone who collaborates with it legitimizes the dictatorship. Today it's the Green Pass and later on who knows what else they'll throw at the citizens. Democracy is over and so is our right to our own bodies. Shame" (MOH, May 2021).

Another comment on the same post read:

"Instead of marketing the Green Patch, tell the people, those you lied to saying the vaccine is safe and has been approved, the many thousands of people suffering from side effects

and the huge spike in annual mortality since the beginning of the Pfizer operation. I myself am astounded to discover that nearly every friend or acquaintance I ask about changes in their health following participation in your experiment suffers from “slight” or serious side effects: facial muscle paralysis, paresthesia, different neurological phenomena, strangulation sensations, stroke (which fortunately did not cause death), numb arms, nausea, dizziness, serious weakness, pneumonia, strange swellings, and many other terrible things. Unfortunately, some people don’t want to think there’s a connection between their deteriorating health and the vaccine. Your brainwashing worked great” (MOH, May 2021).

As mentioned above, besides the Green Pass, which intensified the opposition, the recommendation to vaccinate children was a significant catalyst for opposing the vaccine. For example:

“The MOH people are welcome to inject their own children with whatever they wish and leave ours alone. We will take advice from healthcare professionals who care about our children’s health rather than foreign interests” (MOH, November 2021).

Others went even further and described the vaccines as a “hunting trip” aimed at diluting the population.

"A 12-year-old child died four days after the vaccine. The family was offered a bribe not to talk" (PECC, March 2022).

"As hard as you can!!! There are already murder victims" (PECC, December 2021).

The use of the term “murdered” rather than “died” or “passed away” was not coincidental. It conveys the perception that the vaccines were not only dangerous or ineffective but deliberately designed to kill:

"Today, I understand that all you care about is that we become as sick as possible. Otherwise, how will you make money if we’re healthy??? I’m proud of all my family who are not vaccinated! My parents, my husband, my children, my sisters, my nephews! And nothing, but nothing will break us!!!" (MOH, December 2021).

Another example of this was a comment on a post that presented data according to which, during the COVID-19 pandemic, the US had 300,000 annual deaths more than average:

“In my opinion, the number of dead due to COVID-19 “vacspiracy”¹ is much higher than 300,000” (PECC, April 2022).

4. Discussion

Since its outbreak at the beginning of 2020, the COVID-19 pandemic has affected people's lives worldwide [38] and affected, among other things, individuals' attitudes regarding vaccines. The present study examined justifications for COVID-19 vaccine opposition in social media comments. The choice of this platform was based on a rationale similar to that used in a study examining reactions to polio vaccines, which claimed that while the media usually published the MOH’s formal position, Facebook provided a platform allowing the public to express opinions regarding the advantages and disadvantages of pro-vaccine campaigns [25]. The present study analyzed the Facebook pages of three bodies – *Mida’at* (NGO), the Israeli MOH, and PECC. The HBM used to analyze and categorize vaccine opponents’ stances is a commonly used predictor of health-promoting action, such as vaccine compliance [39]. The present study demonstrates how the model explains vaccine avoidance in a manner perceived by vaccine opposers as health-promoting action, with justifications ranging between fear and avoidance at one end and anger and activism at the other.

The model is centered around how people perceive the *threat of a disease*. This perception is based on how severe they think the disease is and how much damage it can cause. Vaccine opponents tend

¹ The word in Hebrew was *shcorona*, a portmanteau of *sheker* (lie) and Corona.

to believe that the risk of being harmed by the vaccine is high and that the consequences of such harm are severe. On the other hand, they think the likelihood of being seriously affected by the disease is low or even does not exist.

Studies examining vaccine compliance have found that perceived benefits significantly lower vaccine hesitancy [40,41]. The present study finds that the vaccine's advantages have been questioned, which explains vaccine opponents' avoidance. They do not see the vaccine as effective in preventing the disease but rather as a real danger in terms of its serious side effects.

Barrier perception carries much weight when deciding to comply with the vaccine; the higher it is, the lower compliance becomes [42]. The study's findings indicate multiple barriers to change among opposers, primarily emotional and cognitive. Emotional barriers included fears of the vaccine and the side effects that might follow it, similar to findings showing that the most common reasons for vaccine refusal were fear of side effects, anonymity assurance, faulty perception of vaccine-related risk, and lack of accurate information [41]. Cognitive barriers included distrust, which deepened as the pandemic progressed. Broadly speaking, distrust of vaccines was identified as one of the ten leading threats to world health [20]. In the context of this study, the distrust was aimed first at the management of COVID-19, with emphasis on the government and the MOH in particular, and later transformed into a suspicion that the vaccination operation served foreign and even dark interests, economic and/or political. The themes emerging from the readers' comments regarding the COVID-19 vaccine in the present study are similar to those appearing in Israeli social media in 2013 against the MOH's campaign promoting the polio vaccine, with opponents expressing their distrust of the herd immunization concept, fears regarding vaccine safety and distrust of the MOH [25].

The more we delved into the analysis chronologically as the pandemic unfolded, the more extreme the discourse became. This radicalization was evident on both sides of the debate. On the one hand, MOH representatives began to fight different claims deemed "fake news." On the other, anti-vaccine commenters suggested that not only was the vaccination for COVID-19 unnecessary but also that the establishment representatives were hiding things from the public, collaborating with forces indifferent to public health, and even damaging people through the vaccine on purpose. These express the commenters' *urge for action* by resisting the vaccines and publicizing their stance on social media. This situation is similar to the description of previous findings regarding common social media arguments against vaccines, which are based on false scientific data, shifting hypotheses, political arguments focusing on freedom of choice, distrust in the medical community, conspiracy theories, and personal narratives related to negative vaccination experiences [20].

5. Conclusions

Opponents of vaccines see the chance of being harmed by the vaccine and the severity of its consequences, not the chance of being harmed by the disease and its severity. Accordingly, HBM explains the avoidance of vaccination in terms of action promoting health. In addition, public distrust was first directed at the management of the disease, but as time passed, foul play was suspected.

1. As the regulations became stricter, the management of the crisis was perceived as unstable and harsh, and the population's compliance with vaccinations weakened (as can be seen in the proportion of those vaccinated with the first, second, and third doses) [1]. Accordingly, it appears vaccination hesitancy may develop over time – first into public distrust in the government and next into conspiracy and anti-vaccination activism. Hence, early detection of hesitancy may reduce the scope and depth of the phenomenon. Alertness to the "noises" of the population, more focused information, and dealing with "fake news" emerging from the media will improve the ability to inform the public in a way that will increase trust and compliance with vaccinations and health-promoting behavior in general.

Limitations and Future Directions

Despite using three Facebook pages, which represent the entire population to a large extent, we used more quotes from the MOH and PECC because they included more vaccine opponents' comments. However, we analyzed the same number of texts on the three websites based on the same search words from the same period of time. Another limitation is our lack of knowledge of the

commenters' demographic characteristics. Future research may wish to study vaccine opponents' stances using a statistical approach that would enable to examine differences among different subgroups based on social status, gender, education, and ethnicity (for example, in the Israeli context, differences in reader comments between Jews and Arabs, or more generally, between different socioeconomic classes).

Author Contributions: Conceptualization, L.I. and A.R.; methodology, L.I. and A.R.; validation, L.I. and A.R.; formal analysis, L.I., A.R. and C.Z; investigation, L.I. and A.R.; writing—original draft preparation, L.I., A.R. and C.Z; writing—review and editing, L.I. and A.R.; visualization, L.I., A.R., and C.Z; supervision, L.I. and A.R. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was approved by the Institutional Ethics Committee of Yezreel Valley College (protocol code No. YVC EMEK.2023-12, date of approval – 15.12.2023).

Data Availability Statement: No new data were created in this study. The data presented in this study are available online at www.facebook.com, in accordance with the search rules specified in the methodology chapter.

Conflicts of Interest: The authors declare no conflict of interest.

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