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Original article

COVID-19 Among Youth in Israel: Correlates of Decisions to Vaccinate and Reasons for Refusal



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ABSTRACT

Purpose: The primary aim of the present study is to examine the reasons for adolescents' refusal to get vaccinated with the COVID-19 vaccine, and examine correlates of vaccination among adolescents aged 12–18 years in Israel.

Methods: A total of 150 youth aged 12–18 years participated in the study. Following parental consent (30% response rate) from an online internet Israeli participants' pool, 150 youth completed the survey (50.5% response rate). Data were collected from May to June 2021.

Results: Over half (64.0%) of youth in this study had received the COVID-19 vaccine (25.5% received one dose and 38.9% two doses). Of the youth who were not vaccinated the most common reasons cited for refusing the vaccine was not knowing enough about the harms that a vaccine has in the long run, not trusting the drug companies that the vaccine will be safe, believing the virus is not dangerous, and doubting the safety of the vaccine in the short term. Bivariate odds ratios indicate that age (older) and having both parents vaccinated was related to increase the odds of the youth getting vaccinated. Higher distress over the effects of the vaccine was significantly related to lower odds of receiving the vaccine. Social media use was also related to a higher likelihood of being vaccinated at the bivariate level.

Discussion: Study findings provide specific ways in which peer-designed and peer-led public health programs may encourage youth to receive the COVID-19 vaccine in a manner that recognizes concerns of Israeli youth.

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IMPLICATIONS AND CONTRIBUTION

Findings from the present study suggest a variety of reasons why youth may be reluctant to get the COVID-19 vaccine, and, in turn, provide specific insights by which peer-designed and peer-led public health programs may encourage youth to receive the COVID-19 vaccine in a manner that recognizes Israeli youth's concerns.

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On May 10, 2021, the Food and Drug Administration expanded the Emergency Use Authorization for the Pfizer-BioNTech COVID-19 vaccine to include adolescents aged 12–15 years [1]. Following this Emergency Use Authorization, in early June 2021, Israel's Ministry of Health approved the vaccination of youth aged 12–15 years. Israel expanded vaccine eligibility to include adolescents, but left the decision on vaccination up to the parents' preference. However, following two outbreaks in two

schools in Jerusalem and the spreading of the Delta variant, the Ministry of Health issued a formal recommendation for 12- to 15-year-olds to get vaccinated. By the end of June, the Israeli Prime Minister Naftali Bennett urged teenagers to get vaccinated for the coronavirus as a new outbreak spread, saying the country's stock of Pfizer Inc.- BioNTech SE vaccine would expire soon. To date (October 6, 2021), although the Ministry of Health and the Israeli Prime Minister Naftali Bennett have explicitly urged 12- to 15-year-old children to get vaccinated, not all youth have embraced the idea of vaccination. Currently, although 73.6% of youth aged 16–19 years were vaccinated (with two doses), only 43% of youth aged 12–15 years have received two doses of the vaccine [2]. Although the vaccination rates (two doses) of 16- to 19-year-olds are higher than the national average (60.96% for two doses), vaccination rates of 12- to 15-year-olds are significantly lower than the national average, and likely contribute to lowering the national rates of vaccination [2].

In an attempt to boost vaccination, Israel implemented incentives, including the “green pass” and exemption from quarantine [3]. When vaccines were made available to youth, the “green pass” incentive scheme which grants access to social, cultural, and sporting events for those fully vaccinated included youth and in middle and high schools as well. Following the approval of the third shot (booster shot) in Israel [4], youth are required to have a Pfizer booster shot to be eligible for a “green pass.” Currently (October 6, 2021), 26.7% of youth aged 16–19 years received the booster shot [2].

The primary aims of the present study are 2-fold: (1) to examine the reasons for adolescents' refusal to get vaccinated (with the Pfizer Inc.- BioNTech SE vaccine) and (2) to examine demographic, technology use, and psychosocial (e.g., depressive symptomatology, subjective wellbeing, social support) correlates of vaccination among adolescents, aged 12–18 years, in Israel.

Method

Participants and procedure

A total of 150 youth aged 12–18 years participated in the study. Youth were recruited from an early study conducted among 1,000 parents through Panel4All, an online internet Israeli participants' pool [5]. Parents who took part in the main study about the effects of COVID-19 on families in Israel were approached and asked if they would provide consent to survey their children. Of the participants, 297 (29.7%) consented to approaching their children. Following the parent's consent, youth received an invitation to participate in a study about topical, emotional, and social issues in their lives, provided their own assent, and received a small incentive (50 New Israeli Shekel which is equivalent to approximately 15 USD) for their participation. Of 297 children we approached, 150 (50.5%) completed the survey. The survey took an average of 10 minutes to complete and was conducted from 6 July to 17 July. The child survey was anonymous and no data were collected that could identify participants. Youth were linked to their parents by an ID number. The Reichman University Institutional Review Board approved all procedures and instruments. Clicking on the link to the survey guided potential respondents to a page that provided information about the purpose of the study, the nature of the questions, and an assent form (stating that the survey was voluntary, respondents could stop at any time, and responses would be anonymous).

A total of 150 youth participated in the study. Of these, 55 were boys (37.2%) and 93 were girls (62.8%) and the mean age was 15.3 (standard deviation [SD] = 1.9). The majority of youth came from an average (54.4%) or a high (16.8%) income family, with an average of 2.4 (SD = 1.6) siblings. Youth in the study were mostly nonreligious and lived across all parts of the country. The majority of youth (72.5%) reported their parents to be married (Table 1).

Measures

Demographic variables included information about age, gender, income of the family, religiosity, and parents' marital status.

COVID-19 vaccination variables included the question on whether the adolescent was vaccinated (yes/no), and if each of the parents or both were vaccinated (yes/no/do not know). If the adolescent did not receive the COVID-19 vaccine, he or she was provided with a list of 11 reasons for refusal to get vaccinated against COVID-19. Youth were also provided with an option to enter some other response.

COVID-19 experience/fear variables included questions about exposure to other people being infected with the virus (yes/no to friends/family outside home tested positive to COVID-19), the level of fear from another outbreak (on a scale from 1 to 10), and the level of distress about the effects of vaccine (on a scale from 1 to 10).

Subjective wellbeing was measured using seven items and assesses general life satisfaction [6]. Response options range from not true about me (1) to mostly true about me (4). Reliability for the entire scale in the present study was good ($\alpha = 0.83$). Items were combined to create a total scale score (range: 6–25, $M = 20.8$, $SD = 3.6$). Missing data were no more than 4% for each item and replaced with the item mean.

Depression/anxiety symptoms were measured using the Patient Health Questionnaire-four Items [7]. This questionnaire includes four questions on depression/anxiety symptoms. The first two questions relate to the feeling of being depressed and lack of interest in doing things; the second two questions relate to feeling anger and anxiety. Answers to questions are rated as not at all (0), several days (1), more than half days (2), and almost every day (3) [7]. Reliability for the entire scale in the present study was good ($\alpha = 0.80$). Although depression and anxiety can be examined as two separate scales, in the present study items were combined to create a total scale score for depression/anxiety symptoms (range: 3–13, $M = 6.0$, $SD = 2.3$). There were no missing data for these items.

Social support was measured using the Multidimensional Scale of Perceived Social Support [8]. The Multidimensional Scale of Perceived Social Support consists of 12 items assessing participant's perceived social support from three groups: family, friends, and significant other. Youth in the study were asked to indicate how strongly they agreed with each statement on a scale from very strongly disagree (1) to very strongly agree (7). Participant responses were averaged such that higher scores indicated higher perception of social support. Cronbach's alpha was excellent ($\alpha = 0.95$). Items were combined to create a total scale score (range: 11–78, $M = 61.6$, $SD = 13.9$). Missing data were no more than 1.3% for each item and replaced with the item mean.

Health was assessed using the Self-Rated Health single item to assess the youth's overall health. The responses range from poor (1) to excellent (5). A higher score reflects better health.

Technology usage variables included two questions: (1) the amount of time the child spends on social networks each day and (2) the usage of social media Apps (yes/no), including Facebook, Instagram, Snapchat, Twitter, YouTube, and TikTok.

Statistical analysis

Chi-squared cross-tabulations were conducted to examine participant demographic differences based on receipt of the COVID-19 vaccine. Then, descriptive statistics are provided to report on the experience of the participant (e.g., testing, results) and family during the pandemic, receipt of the vaccine, and fears around COVID-19. Next, among unvaccinated youth, we report on the decision-making around vaccination including who was involved in the decision and reasons for refusal. Finally, bivariate odds ratios (ORs) were conducted to examine correlates of vaccination status. Variables significant at the 0.05 level or better were included in a final parsimonious logistic regression model.

Results

COVID-19 experiences among youth in Israel

Most youth (80.7%) had a coronavirus test and of those, 9.9% tested positive. Thirty-seven percent of youth were in isolation once since the pandemic has begun and another 28.9% were in isolation more than once. Nearly 7 in 10 youth (68.0%) said they had a close friend or family member outside of their household who tested positive for COVID-19; 16.7% knew 1 person, 26.0% knew 2–4 people, 15.3% knew 5–8 people, and 9.3% knew 8 or more people. Over half (64.0%) of youth in this study had received the COVID-19 vaccine (25.5% received one dose and 38.9% received two doses), 8.1% had not received the vaccine but said they intended to, and 27.5% said they had not been vaccinated. Vaccination increased with age: 16.7% of youth aged 12–13 years, 20.8% of youth aged 14–15 years, and 62.5% of youth aged 16–18 were vaccinated. When asked about their parents' vaccinations, 82.0% said both parents were vaccinated, 11.3% one of their parents, 2.0% said no but they intended to, and 4.7% said neither parent had been vaccinated. No demographic differences were noted between vaccinated and nonvaccinated youth, except for age—with older youth being more likely to have received the vaccine.

COVID-19 fears

Fears about the virus during the pandemic were moderate. When asked how often they feared that they were infected with COVID-19, the average response was 3.4 (SD = 1.2) on a scale of 1 (all the time) to 5 (never). This is in comparison to their fear that something bad would happen to themselves or their family as a result of coronary heart disease (M = 3.1, SD = 1.1). Fear of another outbreak was also moderate with a mean of 5.5 (SD = 2.6) on a scale of 1 (not at all) to 10 (very much). No differences were noted for this response based on whether the participant had received the vaccine or not. Participants who had received the vaccine were significantly less distressed about its effects (M = 3.7 for vaccinated versus M = 6.3 for unvaccinated youth ($p < .001$)).

Unvaccinated Israeli youth decision making

Youth reported on who was involved in the decision for their vaccination (or not): 17.8% said it was only their own decision, 65.7% reported it was both their and their parents' decision, and 16.4% said it was only their parents' decision. Vaccinated youth were significantly more likely than unvaccinated youth to say this was a joint decision (71.9% vs. 54.0%), whereas vaccinated youth were less likely (10.4%) than unvaccinated youth (28.0%) to say the decision was solely their parents ($\chi^2 = 7.8, p = 0.02$). Bivariate analyses revealed that older adolescents (M = 16.4 years) were more likely than younger adolescents to say that the decision to be vaccinated was all their own. The average age for participants who said the decision was both theirs and their parents was 15.2 years, and 14.4 years for those who said the decision was only their parents ($p < .001$). When asked about the likelihood that their parents would get them vaccinated or offer to get them vaccinated, 12.2% said a great extent, 29.3% said somewhat, 36.6% said very little, and 21.9% said not at all. The most common reason cited for not being vaccinated was not knowing enough about the long-term harms of the vaccine (Table 2). Over half (56.1%) said they did not trust the drug companies to make sure that the vaccine will be safe, 53.7% said the virus was not dangerous, 51.2% did not believe in the safety of the vaccine in the short term, and 51.2% said they preferred not to put drugs or chemicals in their bodies.

Correlates of vaccination among youth

Bivariate ORs indicate that for each increasing year of age there is a 1.5-fold increase in the odds ($p < .001$) of getting the vaccine (Table 3). Having both parents vaccinated was related to a 7-fold increase in the odds ($p < .001$) of the youth getting vaccinated. On the other hand, higher distress over the effects of the vaccine was significantly related to lower odds of receiving it (OR = 0.7, $p < .001$). Social media use was also related to a higher likelihood of being vaccinated at the bivariate level: the more time spent on social media networks the higher the odds of vaccination (OR = 1.3, $p = .02$), and specifically, use of Facebook (OR = 3.1, $p = .004$) and Instagram (OR = 2.8, $p = .02$) was related to being vaccinated; other social media platforms like TikTok, Snapchat, YouTube, and Twitter were not influential. When these bivariate characteristics were included into a parsimonious multivariate model, age (OR = 1.4, $p = .008$) and having both parents vaccinated (OR = 10.8, $p < .001$) were positively related to the youth being vaccinated, while being distressed about the effects of the vaccine was negatively related (OR = 0.7, $p < .001$).

Discussion

The goals of this study were to identify the reasons why youth in Israel do not get vaccinated and the correlates of those who do get the vaccine. Most youth in the study (64.0%) had received the COVID-19 vaccine (25.5% received one dose and 38.9% two doses) with vaccination more common among older versus younger participants. Expectedly, compared to other established vaccines in Israel, such as the Tdap (93.7% of youth vaccinated in this vaccine), the rate of the COVID-19 vaccine is relatively low [9]. Our findings have a robust mix of vaccine decisions made by youth. Findings on misinformation, parental encouragement, perceived danger of the virus, and other influencing variables can

Table 1
Participant demographic characteristics

Characteristic	All youth (n = 150) n (%)	Nonvaccinated youth (n = 53) n (%)	Vaccinated youth (n = 96) n (%)	Chi-squared p value
Gender				
Male	55 (37.2)	19 (36.5)	36 (37.5)	.91
Female	93 (62.8)	33 (63.5)	60 (62.5)	
Mean age (SD)	15.3 (1.9)	14.4 (1.7)	15.7 (1.8)	<.001
Family income				
Above average	25 (16.8)	8 (15.1)	17 (17.7)	.87
Average	81 (54.4)	27 (50.9)	54 (56.3)	
Below average	9 (6.0)	4 (7.5)	5 (5.2)	
Not sure	23 (15.4)	10 (18.9)	13 (13.5)	
Refused	11 (7.4)	4 (7.5)	7 (7.3)	
Mean number of siblings (SD)	2.4 (1.6)	2.6 (1.7)	2.2 (1.5)	.14
Religiosity				
Secular	71 (47.7)	27 (50.9)	44 (45.8)	.31
Traditional, not religious	31 (20.8)	7 (13.2)	24 (25.0)	
Traditional, somewhat religious	8 (5.4)	2 (3.8)	6 (6.3)	
Religious	38 (25.5)	17 (32.1)	21 (21.9)	
Other	1 (0.7)	0	1 (1.0)	
Parents marital status				
Single, never married	3 (2.0)	2 (3.8)	1 (1.0)	.39
Married	108 (72.5)	39 (73.6)	69 (71.9)	
Living with partner	2 (1.3)	0	2 (2.1)	
Divorced	29 (19.5)	9 (17.0)	20 (20.8)	
Separated	1 (0.7)	0	1 (1.0)	
Widowed	2 (1.3)	0	2 (2.1)	
Other	3 (2.0)	2 (3.8)	1 (1.0)	
Refused	1 (0.7)	1 (1.9)	0	
Where live				
North	31 (20.9)	12 (23.1)	19 (19.8)	.90
Lowlands	11 (7.4)	4 (7.7)	7 (7.3)	
Center	63 (42.6)	20 (38.5)	43 (44.8)	
South	18 (12.2)	7 (13.5)	11 (11.5)	
Judea and Samaria	8 (5.4)	4 (7.7)	4 (4.2)	
Jerusalem	17 (11.5)	5 (9.6)	12 (12.5)	

One youth refused to answer the question about receiving the COVID-19 vaccine. Cells that do not add to column totals are due to missing data. SD = standard deviation.

provide some insight into the reasons for and against vaccination among Israeli youth.

Youth who were not vaccinated at the time of the study indicated various reasons for their reluctance. The most common reason cited for not receiving the vaccine was not knowing enough about the long-term harms (82.9%) and the short-term harms (51.2%), and not believing the vaccine is effective (34.1%). These reasons correspond with the most common reasons for adults refusal for the vaccine—that the vaccine is seen as not safe [10] and the long-term effects are unknown [11]. In a study conducted among 1,541 caregivers arriving with their children to 16 pediatric emergency departments across 6 countries, vaccine effectiveness was also important for the majority of parents (58.0%) [12]. Of those providing reasoning for not being vaccinated against COVID-19, 51.6% were concerned over the novelty of the vaccine (not enough testing), and 17.0% responded that they may vaccinate if more information became available [12]. In a study conducted among 911 youth in the United States, youth indicated that they want to receive information on the vaccine and actively search for information on scientific Web sites (e.g., “Centers for Disease Control and Prevention” and “World Health Organization”) [13]. Thus, providing more updated and reliable information on the vaccine may encourage more youth to receive it.

Importantly, among these unvaccinated youth, when asked how likely their parents are to get them vaccinated or encourage

them to get vaccinated, over half (58.5%) said “very little” or “not at all.” This finding may be explained by caregiver’s concerns over the novelty of the vaccine, and corresponds with a previous study indicating that 65% of caregivers reported that they intend to vaccinate their child against COVID-19 [12]. Moreover, overall, having both parents vaccinated significantly predicted vaccination. Clearly, for some youth, education around the vaccination needs to be inclusive of the parents as they are required to provide consent for their child’s medical needs and decisions. Findings raise complex questions about parents’ rights to make these medical decisions on behalf of their adolescent children and adolescents’ ability to make informed choices about their own health.

Another main reason for not being vaccinated is the mistrust some youth have toward the drug companies (56.1%) and the government (41.5%). Trust in the safety and effectiveness of vaccines and the system through which they are delivered is a main factor in vaccine hesitancy [14]. Moreover, trust also includes believing healthcare professionals, health services, and policy makers that they have clean motives when they make decisions about vaccines [14]. Gurwitz [15] explains that the mistrust of Israelis to the vaccine started when the agreement between the Israel government and Pfizer was signed, in which Israel agreed to serve as a real-world testing ground for the vaccine in return for sharing with Pfizer the aggregated information on COVID-19 vaccination and infection rates. At the time

Table 2
Reasons for not getting vaccinated (n = 41)

Reason	n (%)
I still do not know enough about the harms that a vaccine has in the long run	34 (82.9)
I do not trust the drug companies that the vaccine will be safe	23 (56.1)
The Coronavirus is not dangerous	22 (53.7)
I do not believe in the safety of the vaccine in the short term	21 (51.2)
I prefer not to put drugs or chemicals in my body	21 (51.2)
I do not trust the government that the vaccine will be safe	17 (41.5)
I do not believe that the vaccine is effective	14 (34.1)
I do not believe I should get vaccinated if others get vaccinated	14 (34.1)
I recovered from COVID-19 and I am immune	9 (22.0)
Most of my friends were not vaccinated	7 (17.1)
Religious reasons	1 (2.4)
Some other reason	7 (17.1)

of this study, details of this agreement remain undisclosed—a fact which has led to a lack of government transparency and mistrust. Increasing transparency about the disease and the vaccine can enhance youth's trust in the vaccine [16]. Engaging youth in the fight against COVID-19 and developing vaccination educational strategies can also increase the likelihood of youth's commitment toward the vaccines [16].

More than half of unvaccinated youth (53.7%) said that the coronavirus is not dangerous. Previous research shows that COVID-19 vaccine hesitancy increases when the vaccine does not seem necessary to preventing the disease [14], or when people do not believe they will be infected with COVID-19 [17]. Although it is true that, when compared with older adults, severe or fatal COVID-19 disease is much less common in infants, children, and young adults [18,19], the impact of the pandemic has had some devastating effects on children's physical and mental health. Youth are experiencing elevated symptoms of anxiety, depression, and post-traumatic stress disorder due to illness [20–22]. In terms of physical health, a variety of physical conditions may not be treated optimally, as a result of restricted access to health services [23]. Taken together, this has some clear implications for public health messages around this virus. Vaccination in youth can help in achieving herd immunity and reduce outbreaks. Establishing clear messages is critical in order to stop the continued spread of the virus, as well as reminders about how increasing immunity to the virus will improve lives for children and youth directly, like being in school mask-free and a return to a more stable way of living and socializing. Even if youth do not believe coronavirus is dangerous to them, they need to understand that they can still spread the disease and vaccination means protecting others—family, friends, and the larger community—and this message should be included in the campaign strategies for vaccination. Increasing the motivation for vaccination should not be based on intimidation because youth may not perceive the coronavirus as dangerous to them. The commitment and motivation for vaccination should be based on both protecting oneself and others, which are the main correlates for the willingness to get vaccinated among youth [13].

Peer pressure was not as common as other reasons for not being vaccinated but 17% of unvaccinated youth indicated that they were unvaccinated because their friends were unvaccinated. Peer pressure and peer social norms have been found to be

influential in changing adolescent behaviors like unhealthy weight control behaviors [24], distracted driving [25], alcohol use [26], and sexual behavior [27], and would likely be effective for increasing COVID-19 vaccination uptake as well. As such, improving social norms around the COVID-19 vaccine among peers would likely support vaccination uptake (or support positive vaccine decision-making). Campaigns that include youth themselves in the messages may be useful—both in terms of developing the messages that are meaningful to today's youth and as the distributors of those messages via social media. Given the widespread use of social media among Israeli youth, brief public education and awareness campaigns provided by youth may be beneficial. It should be noted that while we asked about peer pressure as one of the reasons for not vaccinating, given that the majority of the sample were vaccinated may imply that the pressure may be influencing them to vaccinate.

Indeed, time spent on social media networks was correlated with higher odds of vaccination, and specifically, use of Facebook and Instagram, at the bivariate level. This finding may be explained by higher exposure to COVID-19-related news, higher exposure of youth to vaccination campaigns, and more access to and communication with like-minded peers. This finding also corresponds with recent studies indicating that exposure to a greater number of traditional media sources and more hours spent on social media were associated with increased COVID-19-related distress [28–30]. Considering 42% of youth in Israel spend three or more hours on social media a day, social media can play a significant role in motivating youth to get vaccinated. Additionally, social media can be a platform to provide clear and relevant information for younger audiences that can be harder to reach through traditional channels. Partnership with social media influencers to empower and engage youth in the fight against COVID-19 can also be effective [16]. Social media is also a central channel in which misinformation (manipulations of facts and unproven scientific theories) circulates [16], placing youth at the highest exposure to misinformation. Thus, efforts should be made to not only provide scientific and evidence-based information on social media, but also increase youth's ability to detect misinformation.

It should be noted that youth under the age of 18 in Israel need parental consent (parents can either accompany their child to get the vaccine or send a written consent form) to receive the COVID-19 vaccine. Thus, a “refusal” is not necessarily the child's decision, but can in fact be the parent who refuses to vaccinate the child. Although the present study shows that in the majority of cases both youth and their parents are involved in this decision, in other cases (16.4%) the decision to vaccinate the child is only the parents' decision. Parents can also disagree about vaccinating the child. In a recent court decision, the Haifa Family Court president, Judge Shelly Eisenberg, authorized a mother to vaccinate her two 15-year-old minors (with the COVID-19 vaccine) despite their father's objection [31]. With the requirement for parental consent at this age, educational efforts directed toward the parents may be of equal importance. Parental consent also raises some ethical questions over children who cannot receive the “green pass” because their parents refuse to vaccinate them.

In the present study, 37% of youth were in isolation once since the pandemic has begun and another 28.9% were in isolation more than once. A report on the isolation rates in Israel suggests that isolation rates are even higher for one isolation—with 52% of the children of Israel experiencing one isolation, and 17% experiencing more than one isolation in the 2020–2021 school year

Table 3

Logistic regression indicating characteristics related to those youth with the vaccine

Characteristic	Bivariate		Parsimonious multivariate	
	Odds ratio (95% CI)	p value	Odds ratio (95% CI)	p value
Demographics				
Youth age	1.5 (1.2–1.8)	<.001	1.4 (1.1–1.9)	.008
High income	1.2 (0.5–3.0)	.68		
Youth female	0.9 (0.5–1.9)	.91		
Parents married	0.9 (0.4–1.9)	.82		
Parents divorced	1.4 (0.6–3.3)	.48		
Secular	0.8 (0.4–1.6)	.55		
COVID experience/fears				
Both parents vaccinated	7.1 (2.7–18.4)	<.001	10.8 (3.3–36.0)	<.001
Friends/family outside home tested positive	0.5 (0.2–1.0)	.07		
Fear another outbreak	1.0 (0.9–1.1)	.89		
Distress over the effects of vaccine	0.7 (0.6–0.8)	<.001	0.7 (0.6–0.9)	<.001
Psychosocial				
Subjective wellbeing	1.1 (0.9–1.2)	.09		
Depressive/anxiety symptoms	1.0 (0.9–1.1)	.92		
Social support	1.0 (0.98–1.03)	.81		
Health	0.8 (0.5–1.3)	.43		
Technology usage				
Amount of time on social networks	1.3 (1.0–1.5)	.02	1.3 (1.0–1.8)	.07
Uses Facebook	3.1 (1.4–6.7)	.004	2.1 (0.6–6.6)	.22
Uses Instagram	2.8 (1.3–6.1)	.01	1.7 (0.6–4.8)	.33
Uses Snapchat	0.9 (0.5–2.0)	.98		
Uses Twitter	2.1 (0.7–6.7)	.21		
Uses YouTube	0.7 (0.3–1.5)	.37		
Uses TikTok	0.9 (0.5–1.9)	.89		

Bold values are significant.

CI = confidence interval.

[32]. Due to the high prevalence of isolations in schools, it is possible that exempt from isolation (according to the green pass scheme) is a central motive for youth to get vaccinated.

Although different strategies to boost vaccination among youth in Israel are important and will minimize risks of COVID-19 infections, some strategies such as the green pass in schools also raise moral, ethical, and legal questions. Promoting public health in a time of a global pandemic often requires using measures that put further specific human rights. However, controlling and limiting the spread of the pandemic would also diminish the need to choose between different rights. As for youth, for example, implementing the green pass scheme in schools is important in minimizing COVID-19 infections. Yet, such strategy will prevent unvaccinated children from fully fulfilling their right to education and will provide them with a less than ideal educational experience [33]. The government should say whether the purpose of promoting vaccination among youth justifies violating the rights of non-vaccinated youth because of their choice—or moreover their parents' choice—not to be vaccinated.

Findings should be interpreted in the context of certain limitations. Data were cross-sectional, so causal or temporal interpretations cannot be made. Our work limitations also include the small number of youth participants, and only youth who received parental consent participated in the study, which can create a sampling bias. Furthermore, youth participating in the study were primarily Jewish, secular, and reported coming from average or high-income families, which may limit the generalizability of our findings. Future studies would benefit from examining correlates of decisions to vaccinate and reasons for refusal in a more diverse sample of youth that reflects the multiculturalism of Israel.

Conclusion

Although vaccine hesitancy is pervasive worldwide across all socioeconomic groups, it may be more pervasive in Israel, as Israel had a rapid rollout of the vaccines in comparison with other countries. Findings from this study suggest a variety of reasons why youth and families may be reluctant to get the COVID-19 vaccine, and, in turn, provide specific insights by which peer-designed and peer-led public health programs may encourage youth to receive the COVID-19 vaccine in a manner that recognizes Israeli youth's concerns.

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