**Preventive health behaviors, BMI, and COVID-19 among culturally diverse adults in Israel**

**Abstract**

**Key words:**

**Background:**

The COVID-19 pandemic has exacerbated health risks for adults around the world, especially for those with comorbidities. The severity of infection and COVID-related mortality have been positively correlated with excessive body weight (Rychter et al., 2020). By January 2021, there were more than 8,000 new COVID-19 cases daily in Israel, with over 1,000 defined as severe infections and a total of 3,495 COVID-19-related deaths (Ministry of Health Israel, 2021). It was found that the Arab population had a disproportionate share of the total morbidity in the country. The relative number of COVID-19 patients in critical condition in Israel has been highest among the Arab population throughout the pandemic (Birenbaum-Carmeli & Chassida, 2021; Haklai et al., 2021).

The risks associated with COVID-19 are exacerbated by the increasing prevalence of obesity globally, which almost tripled between 1975 and 2016, with current estimates suggesting that more than 2 billion people suffer from excessive bodyweight (Smith & Smith, 2016). Obesity is the fifth leading cause of death in the world. Its incidence is steadily increasing among people of all ages, and it is defined as a worldwide epidemic in both developed and developing countries, causing a heavy economic burden as well as high levels of comorbidity and mortality (Lubrano et al., 2013; Mitchell et al., 2011; Smith et al., 2021). Obesity is defined as abnormal or excessive fat accumulation that presents a health risk. According to World Health Organization (WHO) standards, an individual with a body mass index (BMI) of >30 kg/m2 is classified as obese (Yu et al., 2020). In Israel, half of the population is reported to be overweight, defined as (Central Bureau of Statistics, 2018).

 Respiratory dysfunction and impaired respiratory mechanisms associated with obesity have been shown to contribute to the severity of COVID-19 infection (Samuels, 2020; Petrakis et al., 2020; Garg et al., 2020). In a case series study of 5,700 patients hospitalized with COVID‐19 in New York City, researchers found a higher prevalence of obesity (41.7%) (Richardson et al., 2020). Similarly, the rate of severe COVID-19 infections was significantly higher among adults with obesity compared with the general adult population in France (Caussy et al., 2020) and in China, consequently extending hospitalization (Gao et al., 2020).

In light of the increased risk of severe COVID-19 infection among adults with comorbidities, the Health Belief Model (HBM) can serve as an appropriate health behavioral framework to explain the adoption of preventive measures among adults with obesity (Jones et al., 2016). The HBM posits that individuals who perceive a threat for negative health outcomes, such as for COVID-19 infection, will engage in optimal behavior changes. Research has shown that non-pharmaceutical interventions can help mitigate the spread of infection, including hand washing with antiseptic soap, use of alcohol-based hand sanitizer, wearing a face mask, physical distancing, isolation, and quarantine (Ayenigbara et al., 2020). Risk reduction measures require individual and community level participation and are instrumental in pandemic containment (Adhikari et al., 2020; Lao et al., 2021). The HBM has shown adequate utility in the prediction of health behaviors (Costa, 2020; Araban et al., 2017; Id et al., 2022), particularly regarding health promotion and risk reduction activities during the COVID-19 pandemic (Chertok, 2020). The recommendations to socially isolate to reduce the risk of COVID-19 infection are external cues, prompting behavior modification (Wise et al., 2020).

Arab Israeli citizens constitute 21% of Israel’s population (Central Bureau of Statistics, 2020), with 95% of them living in localities ranked in Israel’s lowest socioeconomic clusters and having limited access to healthcare services (Haddad Haj-Yahya et al., 2021; Chernichovsky et al., 2017). Moreover, compared with Jewish adults in Israel, Arab adults have higher rates of diabetes, hypertension, and blood vessel disease, placing them at higher risk for serious COVID-19 infection and complications (Daoud et al; 2018; Levin-zamir et al., 2016).

According to the HBM, people are more likely to take preventive measures against COVID-19 if they perceive the threat of contracting the infection to be serious, feel they are personally susceptible to the infection, have the confidence to execute the recommended preventive actions, and perceive that there are fewer costs than benefits to engaging in preventive measures (Araban et al., 2017). Therefore, identifying the factors influencing acceptance of or resistance to COVID-19 protective measures is important in understanding the effectiveness of public health policies and avoiding or reducing non-adherence to the proposed social controls. The purpose of this study was to examine the association between preventive health behaviors, sociodemographic factors, and obesity among culturally diverse adults in Israel, using the HBM.

*Research Questions*

**Methods**

*Design & Measures*

A cross-sectional study was conducted using an anonymous online questionnaire survey. The questionnaire was developed based on the HBM and included 38 statements on perceptions of health behavior, obesity, and COVID-19. One section included questions about the degree of consent on a licorice-like response scale (measured on a scale of 1 = lowest and 10 = highest). The second part of the survey comprised statements regarding feelings and opinions associated with COVID-19 and obesity. A set of 11 questions was developed based on the model’s constructs about perceived risk of COVID-19 infection, personal risk, risk of spread, and preventive behaviors (measured on a scale of 1 = lowest and 10 = highest) (Table 1). An overall Cronbach’s alpha was calculated for the tool (Rosenstock et al., 1988). Following development of the questionnaire, the online version was sent to 10 health profession colleagues (whose responses were excluded from the survey results) to seek feedback, following which minor adjustments were made. Institutional review board approval was granted by the author’s academic institution prior to initiation of the study.

*Sample*

The sample population included adult residents of Israel who were at least 18 years of age, were fluent in Hebrew, and could participate in the survey by cellphone or computer. Participants were recruited through snowball sampling and through the distribution of a link to the questionnaire that was circulated among social networks of healthcare professionals via email, WhatsApp, and Facebook, together with a request to forward the link to patients throughout Israel. Survey participation took place between December 2020 and January 2021, immediately prior to COVID-19 vaccinations being made available to the general adult population in Israel.

*Analytic Strategy*

Data analysis was conducted using IBM SPSS Statistics Version 28. An alpha level was set at 0.05 for all statistical tests. For participants’ characteristics, means, standard deviations, and ranges were used to describe continuous variables, while categorical variables were described using frequencies and proportions. An exploratory factor analysis with principal component extraction and varimax rotation was conducted to determine the factor structure of the questionnaire. The number of factors was based on the criteria of an eigenvalue > 1, a scree plot and parallel analysis, and Velicer’s minimum average partial test (O’Connor, 2000). Then, a reliability analysis was conducted using Cronbach’s α. Independent sample t-tests were used to compare study variables by gender and religion and zero-order correlations were performed to examine associations between study variables. Lastly, serial mediation was analyzed via the PROCESS macro for SPSS (Model 6; Hayes, 2022). This analysis included BMI as an independent variable, personal risk and risk of spread as mediators (in serial), and preventive behaviors as the outcome, controlling for being a healthcare worker, gender, religion, and comorbidity. Based on 5,000 bootstrap samples of the data, percentile confidence intervals (CI) were estimated for the indirect effects.

**Results**

The sample included 635 adults in Israel, of whom 84.1% (*n* = 534) had a BMI of less than 30 and 15.9% (*n* = 101) had a BMI of 30 or more. There were 484 women (71.2%) and 181 men (28.8%); 436 were Jewish (69.1%), and 195 were “other” (30.9%). Table 2 shows the basic characteristics of the sample.

[Insert Table 1 here]

The overall Cronbach’s alpha for the tool was 0.74. The exploratory factor analysis of the 11 items resulted in 3 factors, which explained almost 70% of the variance. According to the content of the items, Factor 1 was described as preventive behaviors (α = 0.89), Factor 2 as risk of spread (α = 0.78), and Factor 3 as personal risk (α = 0.73), with satisfactory reliability results (Table 2).

[Insert Table 2 here]

Differences in the factors by gender demonstrated that compared with males, females scored higher for preventive behaviors (7.93±1.86 versus 8.38±1.82, *p* = 0.006). Regarding religious affiliation, there were significant differences for all three factors, with Jewish participants scoring lower compared with those of other religious affiliations for personal risk (4.82±1.88 versus 5.41±2.15, *p* = 0.001), risk of spread (6.76±1.58 versus 7.82±1.77, *p* < 0.001), and preventive behaviors (8.12±1.84 versus 8.54±1.79, *p* = 0.008).

Healthcare workers’ scores for risk of spread (7.27±1.67 versus 6.88±1.73, *p* = 0.004) and personal risk (5.23±1.98 versus 4.74±1.95, *p* = 0.002) were significantly higher compared with these scores for non-healthcare workers. Participants with comorbidities scored higher for personal risk (5.98±1.88 versus 4.83±1.95, *p* < 0.001) and preventive behaviors (8.65±1.33 versus 8.18±1.88, *p* = 0.004) (Table 3).

[Insert Table 3 here]

BMI was positively correlated with perceived personal risk (*r*(633) = 0.17, *p* < 0.001) and preventive behaviors (*r*(633) = 0.09, *p* = 0.030). Personal risk was positively correlated with risk of spread (*r*(633) = 0.41, *p* < 0.001) and preventive behaviors (*r*(633) = 0.16, *p* < 0.001). Risk of spread was positively correlated with preventive behaviors (*r*(633) = 0.32, *p* < 0.001).

*Mediation analysis*

As presented in the mediation analysis model (Figure 1), the paths from BMI to personal risk and preventive behaviors were positive and significant, as were the paths from personal risk to risk of spread and from risk of spread to preventive behaviors. The paths from BMI to risk of spread and from personal risk to preventive behaviors were non-significant. Bootstrapping for the serial indirect effect revealed significant results (*B* = 0.01, *SE* = 0.002, bootstrapped 95% CI: 0.002, 0.010). As expected, higher BMI predicted higher personal risk, which in turn predicted higher risk of spread, which subsequently predicted greater preventive behaviors.

[Insert Figure 1 here]

**Discussion**

Findings from this study indicated that BMI was correlated with the perception of personal risk and preventive behaviors, particularly in reference to the HBM (Costa, 2020; Araban et al., 2017; Id et al., 2022). Adults with obesity had a high likelihood of perceiving a risk of being infected with COVID-19, influencing their increased concern about preventive behaviors. This relationship was found to be significant even after controlling the data for sex, religion, profession, and comorbidities, highlighting the influence of obesity on concern about COVID-19. Similar to previous findings, the results of the current study showed a link between preventive behaviors and COVID-19 infection, as well as a link between BMI and a serious illness (Samuels, 2020; Petrakis et al., 2020; Garg et al., 2020), but the effect of being overweight on the perception of the risk of COVID-19 infection and preventive behaviors was not investigated. Similarly, adults with other comorbidities including cardiac, blood vessel, and respiratory diseases perceived they had a higher risk of infection and were more attentive to preventive behaviors.

Differences according to sex demonstrated that compared with males, female participants had a higher likelihood of perceiving the importance of engaging in preventive behaviors. Our findings are consistent with those of some other studies showing that women were more careful than men regarding behaviors to prevent infection, including hand hygiene, wearing a face mask, physical distancing, isolation, and quarantine (Chang, 2020; Dwipayanti et al., 2021). In contrast, researchers in India found that women were less careful and showed less awareness than men regarding the consequences of COVID-19, due to a lack of education (Pinchoff et al., 2020). Understanding differences in health behavior based on sex is important, as men tend to suffer from more severe COVID-19 infection and exhibit higher mortality than women (Global Health 5050, 2020; Xie et al., 2020; Connor et al., 2020).

Regarding religion, in this study Jewish participants attributed less importance to preventive behaviors than Arab participants. Differences were also found in the perception of risk, as Muslims were more concerned with the risk of infection, which may have influenced their engagement in preventive behaviors. Concern regarding COVID-19 may be related to its mortality rate among Arabs in Israel, which is 3.6 per 100,000 compared with 2.6 per 100,000 in the general Israeli population (Avner and Schwartz, 2021). Researchers found disparities in adherence to COVID-19 guidelines between Arab and Jewish adults related to a lack of trust in the government and health ministry of health guidelines, showed opposite results from this study, that test perception of risk and preventive behaviors (Shibli et al., 2022; Lef et al., 2020). Moreover, an online survey among Arab adults in Israel showed that mistrust in the government and a lack of perceived risk about the severity of COVID-19 increased the likelihood of Arab adults not complying with recommendations (Ali-Saleh and Obeid, 2022). These findings point to the importance of examining levels of trust among minority populations.

Healthcare workers’ perceived risk of spread and personal risk were significantly higher compared with these perceptions among non-healthcare workers. Healthcare workers also understood the risks of transmitting the infection and engaged in more health behaviors compared with non-healthcare workers. This finding is consistent with those of previous research (Houghton et al., 2020; Gesser-edelsburg et al., 2020). Healthcare workers were part of the medical preparation for and management of the pandemic. These preparations included increasing physical and human resources to enhance the potential for providing high-level and more intense care. Healthcare workers were also educated in the importance of preventing the transmission of infection, which was apparent from their higher knowledge scores compared with those of non-healthcare workers.

This study was conducted prior to vaccinations against COVID-19 being made available to the public in Israel, when fear of COVID-19 was high, and prevention was limited to non-pharmaceutical interventions. The questionnaire was distributed at a time when there was global uncertainty, isolation, restrictions, and evolving health recommendations. As in many countries, Israel established expert teams, promoted public health messages, and supplied information to the public. However, perspectives about the virus, its prevention, and its treatment were debated and public health professionals were challenged. Furthermore, as rates of obesity in Israel are increasing, with more than half of the population now considered overweight (Zhongming & Wei, 2019), the risk of COVID-19 morbidity is elevated, highlighting the importance of adherence to preventive behaviors.

Research Limitations

Some limitations of this research include the cross-sectional nature of the questionnaire survey design and the snowball sampling method, potentially leading to a biased sample that might not represent the wider target population over the extended pandemic period. Recommendations for continuing research include repeating the survey with other populations and conducting a longitudinal study to examine changes over time.

Conclusion

The current study identified factors associated with adherence to COVID-19 preventive behaviors among adults in Israel and particularly the association with BMI status. As rates of obesity are increasing, the risk of serious COVID-19 infection and complications motivates overweight adults to engage in ways to prevent themselves being infected. HBM is one of the tools that can help to predict optimal health behavior changes and examine associations between preventive health behaviors and obesity, among culturally diverse adults in Israel.

אבנר, ע ושוורץ, ר. (2021). החברה הערבית בצל מגפת הקורונה, ריכוז נתונים. מרכז המידע והמחקר, כנסת.

Caussy, C., Pattou, F., Wallet, F., Simon, C., Chalopin, S., Telliam, C., Mathieu, D., Subtil, F., Frobert, E., Alligier, M., Delaunay, D., Vanhems, P., Laville, M., Jourdain, M., & Disse, E. (2020). Prevalence of obesity among adult inpatients with COVID-19 in France. *The Lancet Diabetes and Endocrinology*, *8*(7), 562–564. https://doi.org/10.1016/S2213-8587(20)30160-1

Central Bureau of Statistics (Israel). (2020). ["The Moslem population of Israel: Data on the Occasion of Eid al-Adha (The Feast of the Sacrifice)"](https://www.cbs.gov.il/he/mediarelease/DocLib/2020/230/11_20_230e.pdf) . 28 July 2020.

Central Bureau of Statistics. Socio-economic index of local authorities. 2020. <https://www.cbs.gov.il/en/subjects/Pages/Socio-Economic-Index-of-Local-Authorities.aspx> [accessed 12 May 2020]

Chang, W. (2020). Taiwanese Journal of Obstetrics & Gynecology Understanding the COVID-19 pandemic from a gender perspective. *Taiwanese Journal of Obstetrics & Gynecology*, *59*(6), 801–807. https://doi.org/10.1016/j.tjog.2020.09.004

Chernichovsky, D., Bisharat, B., Bowers, L., Brill, A., & Sharony, C. (2017). The health of the Arab Israeli population. *State of the nation report*, 325

Chertok, I. R. A. (2020). *Perceived risk of infection and smoking behavior change during COVID-19 in Ohio*. *September*, 854–862. https://doi.org/10.1111/phn.12814

Connor, J., Madhavan, S., Mokashi, M., Amanuel, H., Johnson, N. R., Pace, L. E., & Bartz, D. (2020). *Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID- 19 . The COVID-19 resource centre is hosted on Elsevier Connect , the company ’ s public news and information* . *January*.

Costa, M. F. (2020). Health belief model for coronavirus infection risk determinants. *Revista de Saude Publica*, *54*, 1–11. https://doi.org/10.11606/S1518-8787.2020054002494

Dwipayanti, N. M. U., Lubis, D. S., & Harjana, N. P. A. (2021). Public Perception and Hand Hygiene Behavior During COVID-19 Pandemic in Indonesia. *Frontiers in Public Health*, *9*(May), 1–12. https://doi.org/10.3389/fpubh.2021.621800

Gao, F., Zheng, K. I., Wang, X., Sun, Q., Pan, K., Wang, T., Chen, Y., Targher, G., Byrne, C. D., & George, J. (2020). *Obesity Is a Risk Factor for Greater COVID-19 Severity*. *43*(April), 72–74. https://doi.org/10.2337/dc20-0682

Daoud, N., Soskolne, V., Mindell, J. S., Roth, M. A., & Manor, O. (2018). Ethnic inequalities in health between Arabs and Jews in Israel: the relative contribution of individual-level factors and the living environment. *International journal of public health*, *63*(3), 313-323.‏

Gesser-edelsburg, A., Cohen, R., Abed, N., Shahbari, E., & Hijazi, R. (2020). *A mixed-methods sequential explanatory design comparison between COVID-19 infection control guidelines ’ applicability and their protective value as perceived by Israeli healthcare workers , and healthcare executives ’ response*. 1–7.

Global Health 5050. (2020). COVID-19 sex-disaggregated data tracker. *Sex, gender, and COVID‐19 Project*.‏

 [Haddad Haj-Yahya,](https://en.idi.org.il/experts/1444) N., [Khalaily,](https://en.idi.org.il/experts/33398) M., [Rudnitzky,](https://en.idi.org.il/experts/14499) A., &   [Fargeon](https://en.idi.org.il/experts/26467), B. (2021).
Statistical Report on Arab Society in Israel :2021.

Haklai, Z., Aburbeh, M., Goldberger, N., & Gordon, E. (2021). *Excess mortality during the COVID-19 pandemic in Israel , March – November 2020 : when , where , and for whom ?* *4*, 1–7.

Houghton, C., Meskell, P., Delaney, H., Smalle, M., Glenton, C., Booth, A., Xhs, C., Devane, D., Lm, B., Houghton, C., Meskell, P., Delaney, H., Smalle, M., Glenton, C., Booth, A., Xhs, C., Devane, D., & Lm, B. (2020). *infectious diseases : a rapid qualitative evidence synthesis ( Review )*. https://doi.org/10.1002/14651858.CD013582.www.cochranelibrary.com

Lao, C. K., Li, X., Zhao, N., Gou, M., & Zhou, G. (2021). *Using the health action process approach to predict facemask use and hand washing in the early stages of the COVID-19 pandemic in China*. *2004*.

Lef, C. T., Ing, E., Lykins, J. D., Hogan, M. C., Mckeown, C. A., & Grzybowski, A. (2020). *Association of Country-wide Coronavirus Mortality with Demographics , Testing , Lockdowns , and Public Wearing of Masks*. *103*(April), 2400–2411. https://doi.org/10.4269/ajtmh.20-1015

Levin-zamir, D., Baron-epel, O. B., Cohen, V., Elhayany, A., Baron-epel, O. B., Cohen, V., Elhayany, A., Levin-zamir, D., Baron-epel, O., Cohen, V., & Elhayany, A. (2016). The Association of Health Literacy with Health Behavior , Socioeconomic Indicators , and Self- Assessed Health From a National Adult Survey in Israel The Association of Health Literacy with Health Behavior , Socioeconomic Indicators , and Self-Assessed Health From a National Adult Survey in Israel. *Journal of Health Communication*, *21*(0), 61–68. https://doi.org/10.1080/10810730.2016.1207115

Pinchoff, J., Santhya, K. G., White, C., Rampal, S., Acharya, R., & Ngo, T. D. (2020). Gender specific differences in COVID-19 knowledge, behavior and health effects among adolescents and young adults in Uttar Pradesh and Bihar, India. *PLoS ONE*, *15*(12), 1–13. https://doi.org/10.1371/journal.pone.0244053

Richardson, S., Hirsch, J. S., Narasimhan, M., Crawford, J. M., Mcginn, T., & Davidson, K. W. (2020). *Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area*. *10022*(20), 2052–2059. https://doi.org/10.1001/jama.2020.6775

Rychter, A. M., Zawada, A., Ratajczak, A. E., Dobrowolska, A., & Krela-Kaźmierczak, I. (2020). Should patients with obesity be more afraid of COVID-19? *Obesity Reviews*, *21*(9), 1–8. https://doi.org/10.1111/obr.13083

Samuels, J. D. (2020). Obesity Phenotype is a Predictor of COVID-19 Disease Susceptibility. *Obesity*, *28*(8), 1368. https://doi.org/10.1002/oby.22866

Shibli, H., Palkin, D., Aharonson-daniel, L., & Davidovitch, N. (2022). *Inequalities in Trust Levels and Compliance With Physical Distancing During COVID-19 Outbreaks : Comparing the Arab Minority and Jewish Populations in Israel*. *67*(April). https://doi.org/10.3389/ijph.2022.1604533

Smith, K. B., & Smith, M. S. (2016). Obesity Statistics. *Primary Care*, *43*(1), 121–135, ix. https://doi.org/10.1016/j.pop.2015.10.001

Wise, T., Zbozinek, T. D., Michelini, G., Hagan, C. C., Mobbs, D., & Wise, T. (2020). *Changes in risk perception and self-reported protective behaviour during the first week of the COVID-19 pandemic in the United States*.

Xie, J., Tong, Z., Guan, X., Du, B., & Qiu, H. (2020). *Clinical Characteristics of Patients Who Died of Coronavirus Disease 2019 in China*. *2019*(4), 2020–2023. https://doi.org/10.1001/jamanetworkopen.2020.5619

Yu, W., Rohli, K. E., Yang, S., & Jia, P. (2020). *Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID- 19 . The COVID-19 resource centre is hosted on Elsevier Connect , the company ’ s public news and information* . *January*.

Zhongming, Z., & Wei, L. (2019). Tackling obesity would boost economic and social well-being.

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**Table 1.** Sample characteristics according to BMI status (N = 635).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   |   |   | **Body mass index (kg/m2)** |   |
|  | **Total sample** |  **< 30** |  **≥ 30** |  |
|  | **(*N* = 635)** | **(*n =* 101)** | **(*n =* 534)** |  |
| **Variable** | ***n*** | **%** | ***n*** | **%** | ***n*** | **%** | ***p-value*** |
| Gender |  |  |  |  |  |  | 0.009 |
|  Male | 181 | 28.8% | 142 | 26.7% | 39 | 39.8% |  |
|  Female | 448 | 71.2% | 389 | 73.3% | 59 | 60.2% |  |
| Family status |  |  |  |  |  | 1.98 |
|  Married/living with partner | 403 | 63.7% | 333 | 62.6% | 70 | 69.3% |  |
|  Other | 230 | 36.3% | 199 | 37.4% | 31 | 30.7% |  |
| Education |  |  |  |  |  |  | 0.026\* |
|  Academic | 486 | 76.9% | 417 | 78.5% | 69 | 68.3% |  |
|  Other | 146 | 23.1% | 114 | 21.5% | 32 | 31.7% |  |
| Religion |  |  |  |  |  |  | 0.831 |
|  Jewish | 436 | 69.1% | 366 | 68.9% | 70 | 70.0% |  |
|  Other | 195 | 30.9% | 165 | 31.1% | 30 | 30.0% |  |
| Healthcare worker |  |  |  |  |  | 0.795 |
|  No | 303 | 47.7% | 256 | 47.9% | 47 | 46.5% |  |
|  Yes | 332 | 52.3% | 278 | 52.1% | 54 | 53.5% |  |
| Comorbidity a |  |  |  |  |  | < .001 |
|  No | 532 | 84.4% | 462 | 87.2% | 70 | 70.0% |  |
|  Yes | 98 | 15.6% | 68 | 12.8% | 30 | 30.0% |  |
| Region in Israel |  |  |  |  |  | 0.501 |
|  North | 142 | 25.3% | 120 | 25.5% | 22 | 23.9% |  |
|  Sharon | 154 | 27.4% | 129 | 27.4% | 25 | 27.2% |  |
|  Center | 134 | 23.8% | 108 | 23.0% | 26 | 28.3% |  |
|  Jerusalem & Shfela | 92 | 16.4% | 76 | 16.2% | 16 | 17.4% |  |
|  South | 40 | 7.1% | 37 | 7.9% | 3 | 3.3% |   |
| *Note:* a Blood pressure, heart disease, respiratory disease, and/or asthma. |

**Table 2.** Results of exploratory factor analysis based on the COVID-19 risk perception questionnaire (N = 623)

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Preventive behaviors** | **Risk of spread** | **Personal risk** |
| How much do you think that you are personally at risk of getting infected? |  |  | .81 |
| How much do you think that you are personally at risk of severe infection? |  |  | .83 |
| How much do you think that members of your home are at risk of getting infected? |  |  | .68 |
| How serious is the overall risk in your community of the spread of infection? |  | .74 |  |
| How serious is the overall risk in your country of the spread of infection? |  | .86 |  |
| How easily does coronavirus spread? |  | .81 |  |
| How important is it for you to avoid crowds or groups of people? | .88 |  |  |
| How important is it for you to avoid public places? | .88 |  |  |
| How important is it for you to keep a distance from other people? | .87 |  |  |
| How important is it for you to wear a mask in public? | .77 |  |  |
| How important is it for you to maintain hand hygiene? | .68 |  |  |
| Eigenvalue | 3.48 | 2.22 | 1.94 |
| Percentage of variance explained | 31.6% | 20.2% | 17.8% |
| Cronbach’s α | 0.89 | 0.78 | 0.73 |
| *Note:* Factor loadings above .45 are shown.  |

**Table 3.** Means, standard deviations, and independent samples t-test statistics for study variables

|  |  |  |  |
| --- | --- | --- | --- |
|   | **Gender** |  |   |
|  | **Male (*n* = 181)** | **Female (*n* = 448)** |  |  |
| **Variable** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | **Cohen’s *d*** |
| Risk of spread | 6.98 | 1.77 | 7.12 | 1.69 | -0.99 | -0.09 |
| Personal risk | 5.14 | 2.00 | 4.96 | 1.97 | 1.03 | 0.09 |
| Preventive behaviors | 7.93 | 1.86 | 8.38 | 1.82 | -2.78\*\* | -0.24 |
|  | **Religion** |  |  |
|  | **Jewish (*n* = 436)** | **Other (*n* = 195)** |  |  |
| **Variable** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | **Cohen’s *d*** |
| Risk of spread | 6.76 | 1.58 | 7.82 | 1.77 | -7.50\*\*\* | -0.65 |
| Personal risk | 4.82 | 1.88 | 5.41 | 2.15 | -3.32\*\*\* | -0.30 |
| Preventive behaviors | 8.12 | 1.84 | 8.54 | 1.79 | -2.67\*\* | -0.23 |
|  | **Healthcare worker** |  |  |
|  | **No (*n* = 303)** | **Yes (*n* = 332)** |  |  |
| **Variable** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | **Cohen’s *d*** |
| Risk of spread | 6.88 | 1.73 | 7.27 | 1.67 | -2.90\*\* | -0.23 |
| Personal risk | 4.74 | 1.95 | 5.23 | 1.98 | -3.16\*\* | -0.25 |
| Preventive behaviors | 8.15 | 1.80 | 8.34 | 1.86 | -1.36 | -0.11 |
|  | **Comorbidity** |  |  |
|  | **No (*n* = 532)** | **Yes (*n* = 98)** |  |  |
| **Variable** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | **Cohen’s *d*** |
| Risk of spread | 7.07 | 1.73 | 7.11 | 1.59 | -0.19 | -0.02 |
| Personal risk | 4.83 | 1.95 | 5.98 | 1.88 | -5.38\*\*\* | -0.59 |
| Preventive behaviors | 8.18 | 1.88 | 8.65 | 1.33 | -2.34\* | -0.26 |
| \**p* < .05. \*\**p* < .01. \*\*\**p* < .001. |

**Figure 1.** Model depicting the serial indirect effects of body mass index on preventive behaviors via personal risk and risk of spread *(N* = 621)



*Note:* Values are unstandardized regression coefficients (standard errors), controlling for being a healthcare worker, gender, religion, and comorbidity. Solid lines indicate significant paths, and dashed lines indicate non-significant paths.

\*\**p* < 0.01. \*\*\**p* < 0.001.