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BEHAVIOUR INSIGHTS RESEARCH ON DRIVERS INFLUENCING COVID-19 VACCINATION-RELATED BEHAVIOURS IN MOLDOVA

Chisinau, May 2024

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Acknowledgements

We would like to thank all those who supported this research. The Euro Health Group team would like to acknowledge the support received from the UNICEF Regional Office for Europe and Central Asia (ECARO), especially the support of Ms Viviane Melo Bianco and Dr Ildiko Tombor, as well as the members of the UNICEF country office team in Moldova, especially our focal point Mr Farhad Imambakiev, as well as Ms Cristina Stratulat, Ms Angela Capcelea, Mr Igor Codreanu, and Ms Elena Laur who advised our team on this research with thoughtful guidance and suggestions. We would also like to thank the members of the CIVIS team, especially Mr Ruslan Sintov who prepared and coordinated data collection in Moldova. Great appreciation goes to Mr Veaceslav Gutu from the National Agency for Public Health, of the Ministry of Health of the Republic of Moldova who was our key partner consulted during this study. Finally, we would like to express our deep gratitude to the individuals who dedicated time to participate in this research – to general population and healthcare workers (HCWs) from Moldova.

MINISTERUL SĂNĂTĂȚII AL REPUBLICII MOLDOVA

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Abbreviations and acronyms

BDs	Behavioural Drivers
BDM	Behavioural Drivers Model
BI	Behaviour Insight
CAPI	Computer-Assisted Personal Interviewing
CO	Country Office
COVID-19	**CO**rona**VI**rus **D**isease of 2019 (Disease caused by the SARS-CoV2 virus)
ECARO	UNICEF Regional Office for Europe and Central Asia
EHG	Euro Health Group A/S
HCWs	Healthcare workers
QA	Quality assurance
KAP	Knowledge, Attitudes, Practices
MOH	Ministry of Health
NAPH	National Agency for Public Health
UNICEF	The United Nations Children's Fund
WHO	World Health Organization

This research report is primarily intended for the government of the Republic of Moldova, Ministry of Health, and the National Agency for Public Health and may also be of interest to health institutions and professionals involved in COVID-19 vaccination, as well as other stakeholders who are interested in gaining insights into the barriers and drivers that influence people's COVID-19 vaccination related decisions and practices in Moldova. The research results will be used by the Ministry of Health and the National Agency for Public Health to develop communication strategies and other types of interventions, as relevant, to increase the vaccination coverage.

1. Background

1.1 Country context

The Republic of Moldova is an upper middle-income country in Eastern Europe with a population of 2.5 million[1]. In June 2022, the Republic of Moldova was granted European Union candidate status. Just over half of the population lives in rural areas (57%)[2]. The Human Development Index for the Republic of Moldova was 0.767 in 2021 (ranked 80 out of 189 countries worldwide).[3] GDP per capita was US$ 5,562.6 in 2022. The Gini coefficient, as a measure of inequality of income or wealth, was 25.7, and the absolute poverty rate was 31.1% in 2022[4] The Republic of Moldova has a fertility rate of 1.8 births per woman[5], and a life expectancy at birth 71.4 years in 2021[6].

The health system of the Republic of Moldova is organized according to the principles of universal access to basic health services and equity and solidarity in health care financing; it is funded from both the state and individuals through mandatory health insurance system managed by the National Health Insurance Company[7]. The share of the population covered by health insurance increased from 85.8% in 2016 to 88.2% in 2018, and then slightly declined to 87.7% in 2021. The health system includes a mix of public and private medical facilities, as well as public agencies and authorities involved in the provision, financing, regulation and administration of health services. Public medical facilities at primary and secondary levels provide services to the community and belong to local public authorities. In each district, there are also providers of emergency care (ambulance services) that are part of the Ministry of Health (MOH). Health facilities at the tertiary level provide specialized and highly specialized medical care for the whole population; almost all of these tertiary facilities are located in Chisinau and belong to the MOH.

The MOH is primarily responsible for health policy and organization and provision of health services. The National Agency for Public Health is under the MoH and manages public health services. The new National Health Strategy which is currently being developed in line with the SDG Agenda 2030 emphasizes the role of primary care and the overall efficiency of the health system.

Primary healthcare services are delivered by family doctor offices in rural areas, and by large family health centers in urban areas. People are obliged to register with a family doctor. Primary health care accounted for the almost a fifth of the total health insurance expenditure in 2021. The number of publicly funded primary care facilities was 293 in 2021[8]. Secondary care includes inpatient and specialized outpatient services provided by municipal and district hospitals, which are subordinated to MOH. Tertiary hospitals provide more complex services and are subordinated to the MOH.

In 2019 public spending on health amounted to 3.8% of GDP, which is below the average of the EU (6%) and South-Eastern Europe (5%)[9]. In 2019 out-of-pocket payments accounted for 36% of health spending, which shows a decreasing trend from 2015, when it was the highest at 46.2[10]. According to the National Bureau of Statistics, a number of physicians in 2020 was 477 per 100.000 population, while the number of nurses was 893. However, the distribution of health personnel is uneven, with the center and south of the country having fewer physicians than the north. The average age of family doctors is concerning, with the 28% of doctors reaching retirement age[11].

1 https://statistica.gov.md/ro/statistic_indicator_details/25
2 https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=MD
3 https://data.worldbank.org/country/moldova
4 NBS: StatBank Absolute poverty measures by Areas, Indicators and Years. PxWeb (statistica.md)
5 https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=MD
6 https://statistica.gov.md/ro/statistic_indicator_details/25
7 World Health Organization. Health systems in action: Republic of Moldova: 2022 edition.
8 Ibid.
9 World Health Organization. Health systems in action: Republic of Moldova: 2022 edition.
10 WHO, European Observatory on Health Systems and Policies - Health Systems in Action: republic of Moldova 2022.
11 World Health Organization. Health systems in action: Republic of Moldova: 2022 edition.

1.2 COVID-19 vaccination in Moldova

Vaccination against COVID-19 in Moldova was initiated in March 2021, through COVAX donations, bilateral donations and public procurement. COVID-19 vaccination was provided free of charge in public health facilities. The country implemented a three-stage National COVID-19 Immunization Plan, with the immediate vaccination of HCWs and other groups at high risk of COVID-19 infection in stages I and II (staff and wards of residential institutions, adults over 60 years of age, social workers, people with co-morbidities, educators, defence and state security personnel and prison staff). In May 2021, vaccination of the general population (stage III) was initiated. By June 2023, 33% of the Moldovan population had completed initial COVID-19 vaccination protocol. By June 2023, a total of 2,29 million vaccine doses had been administered[12]. People aged 18-29 years had the lowest vaccination coverage. To support vaccine uptake, UNICEF and WHO supported MOH to develop a communication strategy and action plan for COVID-19 immunisation, and implemented a national awareness campaign "Be safe: get COVID-19 vaccine". Nine vaccines against COVID-19 have been licensed for use in Moldova: Moderna, Pfizer/BioNTech, CanSino, Gamaleya Sputnik V, Johnson & Johnson, Oxford/AstraZeneca, Covishield, Sinopharm, Sinovac.

According to UNICEF's 2022 report, the national COVID-19 immunisation coverage in Moldova was 32.3%, well below the target of 70% by 2022. Coverage was highest in the 70-79 age group (65%), followed by the 60-69 age group (58%), and only 34% in the 80+ age group. Low uptake was attributed to vaccine hesitancy caused by misinformation, the war in Ukraine and other factors. However, coverage among HCWs was high (over 93%)[13].

The following research has been conducted to date in Moldova to better understand vaccine hesitancy for COVID-19 immunisation:

- Behavioural insights study on COVID-19 conducted by WHO Regional Office in Moldova in October 2021 in a representative sample of adult general population revealed that trust in all institutions handling the pandemic has dropped significantly during the time, as well as perception of susceptibility to COVID-19 disease. Nearly half of respondents had received at least one dose of the COVID-19 vaccine, while 34% of those who had not received the vaccine intended to do so. A large proportion of respondents had concerns about vaccine safety, with those with lower intention having bigger concerns. Those with lower vaccination intentions were more likely to believe that vaccination will not help control the spread of COVID-19 and that vaccination is not important for their health. Those with lower vaccination intentions were also more likely to believe that other people did not want them to be vaccinated against COVID-19[14].
- A qualitative study on perceptions, attitudes and beliefs on the acceptability of the anti-COVID-19 vaccine was conducted by the Center of Health Policies and Studies and UNICEF among members of the general population and relevant stakeholders in November 2021. The results showed a high level of vaccine distrust among unvaccinated respondents, with most questioning the efficacy and safety of vaccines. The unvaccinated relied mainly on online postings, traditional media, community people and doctors for information about vaccines. They also emphasised that they expect health professionals to give them accurate information about vaccines, but they encounter doctors who are reluctant to recommend vaccination. The HCWs reported that they do not have enough time to discuss vaccination with patients due to work overload, but also due to incomplete information they receive from the authorities[15].
- The KAP survey of HCWs on COVID-19 vaccination, conducted between June and September 2022, showed that vaccination coverage among HCWs was very high (96.6%). The majority of them (68.9%) were absolutely or quite sure that the vaccine can prevent COVID-19 disease. The majority of them were most confident in official documents (84.7%), scientific publications (47.4%) and conferences as sources of information about COVID-19 vaccination. Even 84.2%

12 https://ourworldindata.org/coronavirus/country/moldova
13 UNICEF Moldova Country Office. Country Office Annual Report 2022. Update on the context and situation of children. Available at: https://www.unicef.org/media/136201/file/Moldova-2022-COAR.pdf
14 WHO Regional Office for Europe. (2021). Behavioural insights on COVID-19 in The Republic of Moldova. Monitoring knowledge, risk perceptions, preventive behaviours and trust to inform pandemic outbreak response.
15 UNICEF, USAID, POS, CBS. Perceptions, Attitudes and Believes on the Acceptance of the Anti-COVID-19 Vaccine in the Republic of Moldova. Qualitative study. Chisinau 2022.

of HCWs recommended and promoted COVID-19 vaccination. For 88.2% the main reason for vaccination against COVID-19 was to protect themselves, while for 49.1% the reason was to protect others. For 61.8%, experience of death or serious complications in the immediate environment was a factor influencing the intention to be vaccinated. For 85%, confidence in national regulations was an important factor in their decision to vaccinate. Concerns about vaccine side effects were the reason for refusal in 50% of non-vaccinated respondents, while 42.1% were concerned that vaccines were being developed too quickly. 10.5% were concerned about vaccine effectiveness. In addition, 71.1% of non-vaccinated HCWs believed that COVID-19 does not cause serious complications, while 36.8% believed that natural immunity after disease is stronger than vaccine-induced immunity. Only 36.8% of non-vaccinated health workers recommended and promoted vaccination[16].

In summary, the available COVID-19 vaccine hesitancy research conducted to date in Moldova mostly explored attitudes as drivers of vaccine hesitancy (particularly attitudes towards vaccine safety and vaccine efficacy, trust in the health system, perceived risk of the disease), social influence and the communication environment.

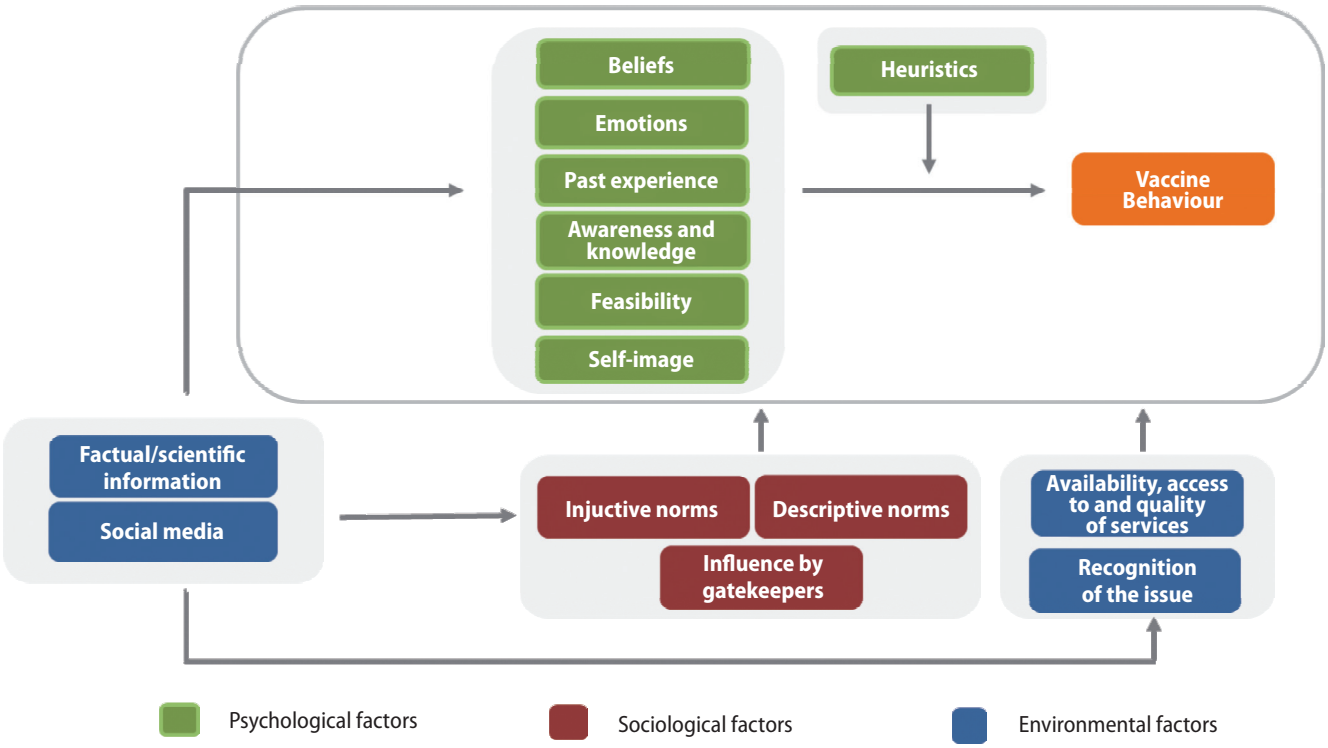
16 The National Agency for Public Health of the Republic of Moldova. (2022). Study of knowledge, attitudes and practices regarding anti-COVID-19 vaccination among medical personnel in Moldova.

2. Theoretical Framework

Vaccine acceptance and demand and ways to improve them are now in the focus of many countries. Understanding the drivers influencing people's immunization-related choices and practices is expected to enable government and decision makers to obtain insights into barriers and drivers to vaccination in priority target groups and enable them to design evidence-based interventions for high and equitable vaccination uptake.

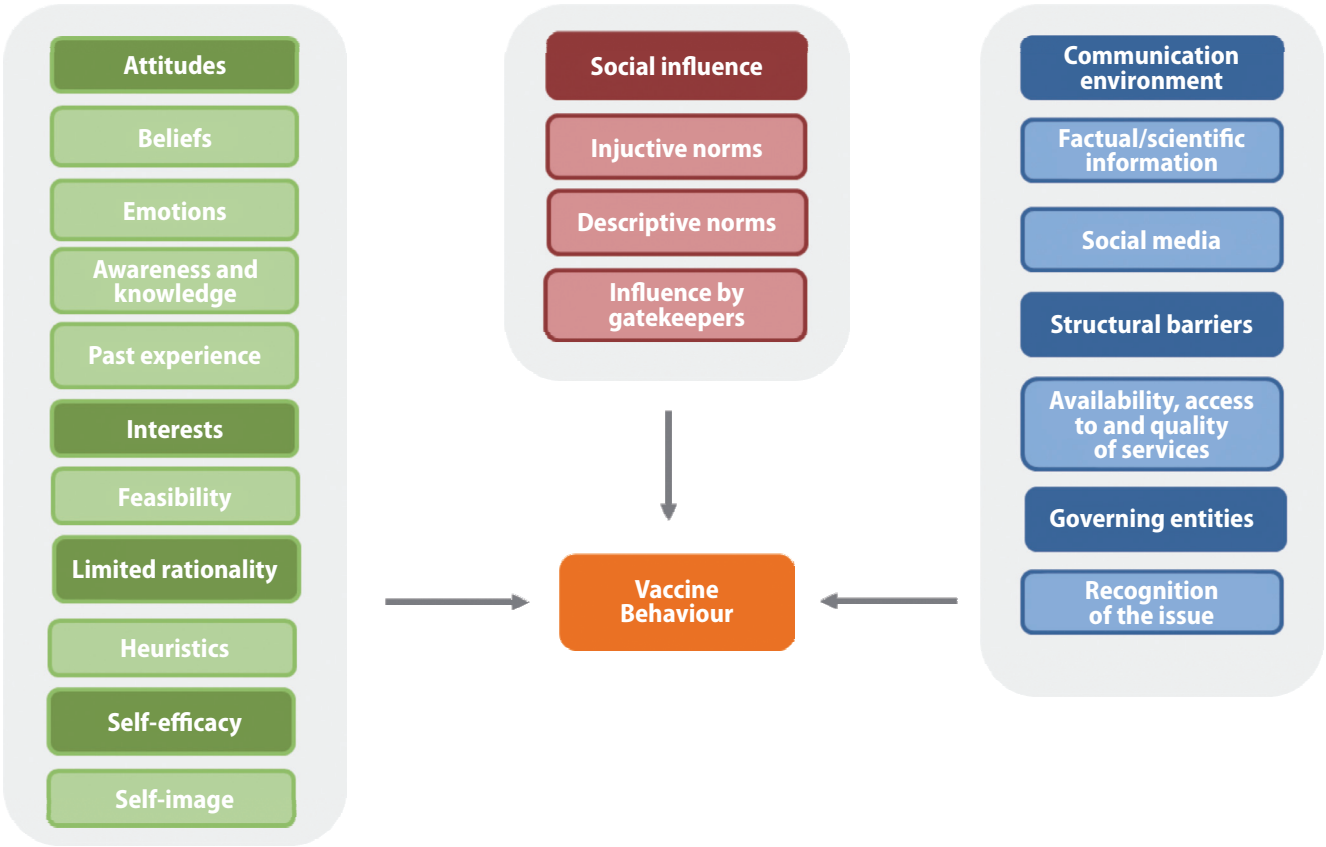
There are various efforts to define the best theoretical behaviours change model or adapt existing models which consider all potential barriers for vaccine uptake and help health authorities to analyse vaccination intents and behaviours. To understand the factors (drivers) influencing people's immunization-related choices and practices in Moldova the **adapted** Behavioural Drivers Model (BDM) was used (Figures 1 and 2).

Figure 1. Adapted Behavioural Drivers Model (BDM) model



As a transtheoretical, comprehensive model, the **adapted BDM** applies a broad perspective and a comprehensive framework for analysing the psychological, sociological and environmental levels of behavioural drivers. Each level includes several complex factors (see Figure 1) and more sophisticated dimensions (see Table 1). The BDM framework used allows the integration of key drivers of vaccination behaviour based on empirical evidence. In addition, the psychological level of drivers allows for the inclusion of innovative psychological factors that are important in explaining vaccination behaviour, such as cognitive biases and information processing. Furthermore, the factors and dimensions of the BDM are recognised as important for the design of behavioural interventions. This is of particular interest to this research as the findings will be used to inform programme recommendations.

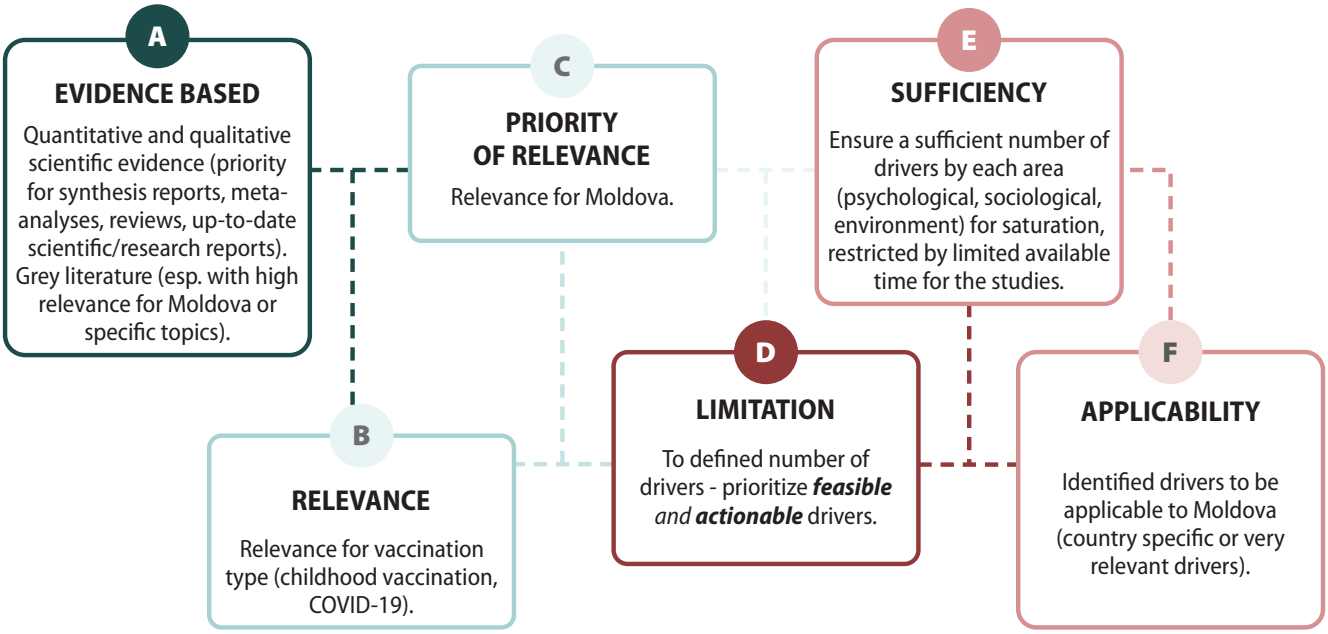
Figure 2. Adapted BDM model with selected factors (Level 1) and dimensions (Level 2)



Based on the review of the relevant literature[17] and conducted interviews and consultations with UNICEF ECARO and the Country Office in Moldova (CO Moldova), the criteria in Figure 3 were developed and applied for identification, selection and prioritization of the behavioural drivers (BDs) that influence COVID-19 vaccination-related behaviours. As a first step (A), a review of relevant scientific literature was conducted to identify a list of theory-informed and evidence-based factors (drivers) influencing immunization-related behaviours at the levels of the adapted BDM model (psychological, sociological and environmental). The focus was on meta-analyses and synthesis reports to quickly identify those drivers with the most substantial evidence and reliability. As a second step, the criteria *relevance* (B) was applied in regard to the topics focused on COVID-19 vaccination after which assessment *and prioritization* (C) of the available evidence and *relevance* of the driver was conducted. Further, a *feasibility and actionability* criterion (D) was applied to limit the number of drivers for feasibility considerations while checking the *sufficiency* (E) to ensure the saturation of the psychological, sociological, and environmental areas of drivers. At the same time, actionability of the pre-selected drivers was considered, focusing on those that could be acted upon. By applying criterion (F), the pre-selected drivers were confirmed as applicable to Moldova.

17 Scientific literature, synthesis and meta-analysis of behaviour models and drivers influencing immunization-related behaviours, and various country specific documents, reviews and reports.

Figure 3. Selection and prioritization criteria for BDs



By applying the above-presented criteria the behaviour drivers (BDs), influencing COVID-19 vaccination-related behaviours of general population and HCWs, were selected (based on their empirical relevance in reviewed literature). Upon BDs selection they were matched with three categories of the adapted theoretical BDM (psychological, sociological and environmental drivers) and divided in subcategories (Level 1 - factors) and further subcategories (Level 2 - dimensions)[18]. The selected BDs are presented in Table 1 below.

18 For example, perceived vaccine efficacy (the driver we have selected from the literature) belongs to the psychological category of the BDM model, attitude factor, and beliefs dimension. Social networks belong to the sociological category of the BDM model, social influence factor, and injunctive/descriptive norms dimension.

Table 1. Selected behaviour drivers that influence COVID-19 immunization-related behaviours (general population and HCWs)

Behaviour Drivers Model (BDM) – General population and HCWs					
Level 1 driver (factor)	**Level 2 (dimension)**	**Indicator**	**Indicator definition**	**Rationale for selection**	**Other Literature**
Psychological factors					
Attitudes	Beliefs	Perceived vaccine efficacy	Belief that the COVID-19 vaccine administration is the beneficial intervention to successfully reduce the disease.	Identified as one of the most important drivers of vaccine behaviour: Research show that vaccine hesitancy increases in line with concerns regarding vaccine efficacy. People more inclined to believe in protective nature of vaccines are less likely to be vaccine hesitant (Machida et al., 2021; Larson et al., 2015).	Al Shurman et al. 2021, Al-Amer et al. 2021, Aw et al. 2021, Cascini et al. 2021, Galanis et al. 2021, Lin et al. 2021, Nehal et al. 2021., Troiano and Nardi 2021, Wake 2021; Biswas et al 2021, Li et al. 2021.
Attitudes	Beliefs	Perceived vaccine safety	Belief that the COVID-19 vaccine is harmless, that is, the COVID-19 vaccine does not cause adverse effects.	Identified as the most common concern regarding vaccination (Karafillakis & Larson, 2017; Wang et al., 2020). When a vaccine is considered to have side effects or other negative consequences, getting the vaccine will likely be perceived as a risky course of action.	Al Shurman et al. 2021, Al-Amer et al. 2021, Aw et al. 2021, Cascini et al. 2021, Galanis et al. 2021, Lin et al. 2021; Biswas et al 2021, Hajure et al. 2021, Li et al. 2021, Troiano and Nardi, 2021
Attitudes	Beliefs	Perceived danger of disease and likelihood of infection	Beliefs regarding the infectivity of COVID-19 and the severity of the clinical symptoms it causes.	Studies from different parts of the world showed that respondents were more likely to be willing to get vaccinated against COVID-19 if they reported higher levels of perceived severity of COVID-19 disease (Shmueli, 2021; Berg & Lin, 2021). This finding implies that those who intend to get vaccinated view themselves as more likely to have significant consequences of the COVID-19 disease compared to those who do not intend to get vaccinated.	Al Shurman et al. 2021, Al-Amer et al. 2021, Aw et al. 2021, Cascini et al. 2021, Galanis et al. 2021, Lin et al. 2021, Nehal et al. 2021., Troiano and Nardi 2021, Wake 2021; Biswas et al 2021, Galanis et al. 2020, Hajure et al. 2021.
Attitudes	Beliefs	Trust in societal factors	Confidence in political and health authorities, science, pharmaceutical companies, and healthcare professionals.	Structural crisis of trust[19] in institutions has become one of the most important issues in contemporary societies. Trust in the healthcare system, the experts defining vaccination strategies, and more generally in government bodies significantly affects vaccine acceptance (Verger & Dubé, 2020).	Al Shurman et al. 2021, Al-Amer et al. 2021; Aw et al. 2021, Cascini et al. 2021, Nehal et al. 2021, Nindrea et al. 2021, Troiano and Nardi 2021, Wake 2021, Mattia et al. 2021, Murphy et al. 2021; Biswas et al 2021, Hajure et al. 2021, Li et al. 2021
Attitudes	Beliefs	Trust in information sources	Attitude toward the credibility of selected sources of information	The level of trust in sources of information plays an important role in motivating engagement of people in self-protective behaviours (Lep et al., 2020). It is of crucial importance that information is communicated by credible sources that would be perceived as useful by the audience. Numerous studies show that as concerns regarding information sources increase, people hesitancy to vaccinate also increases (Victor et al., 2020).	Gehrau et al., 2021; Lu et al., 2021; Sun et al., 2021; Ali et al., 2020; Victor et al., 2020

19 Trust can be defined as 'a relationship that exists between individuals, as well as between individuals and a system, in which one party accepts a vulnerable position, assuming the ... competence of the other, in exchange for a reduction in decision complexity' (Larson et al., 2018).

Behaviour Drivers Model (BDM) – General population and HCWs					
Level 1 driver (factor)	**Level 2 (dimension)**	**Indicator**	**Indicator definition**	**Rationale for selection**	**Other Literature**
Attitudes	Beliefs	Conspiracy beliefs	Beliefs in conspiracy theories (a conspiracy theory is an explanation for an event or situation that invokes a conspiracy by sinister and powerful groups, often political in motivation	Numerous studies shows that people who are more vaccine hesitant are more likely to believe in conspiracy theories (Bertin et al., 2020; Swami et al., 2010; Hornsey et al., 2018). Holding the stronger beliefs that other people have hostile intents and having more fear of dangers posted from external factors the unvaccinated were less likely to trust in goodwill of the source.	Holm, 2009; Cichocka et al., 2016; Darwin et al., 2011; Murphy et al. 2021. Simione et al. 2021; Al-Amer et al. 2021, Aw et al. 2021
Attitudes	Awareness and knowledge	Knowledge	Factual knowledge regarding vaccines	Important determinant of vaccination behaviour. Research shows that knowledge regarding immunization leads to positive health care–seeking behaviour, which motivates people decision to vaccinate (Kalaij et al., 2021).	Wilder-Smith et al., 2020; Kalaij et al., 2021; Alabadi et al., 2020: Bangura et al., 2020
Attitudes	Emotions	Perceived Responsibility	Beliefs related to perceived responsibility in population refer to strength of personal convictions about what 'needs' to be done in the vaccine decision-making situation.	Research shows that, in hesitant person, vaccine decision making is accompanied by strong burden of perceived responsibility. Hesitant persons are often doubly concerned; scared of possibility to contract disease, and at the same time worried about the adverse effects of vaccines (Crescitelli et al., 2020). Search for as much information as possible in the infodemic age (WHO, 2022), makes finding the optimal solution even more difficult.	Crescitelli et al., 2020; Wilder-Smith et al., 2020 Hays, 1996; Kuan, 2022
			Perceived responsibility **in healthcare workers** refers to the responsibility towards patients in accordance with the professional role.	From the ethical point of view, professional responsibility to recommend vaccination to children without contraindications is in accordance with the best interest standard, with the aim to promote and protect children health (Chervenak et al., 2016). Studies show that those healthcare workers who perceived higher responsibility were more likely to recommend vaccination to their patients (Tuckerman et al., 2020).	Chervenak et al., 2016 Tuckerman et al., 2020
Attitudes	Past experience	Past experience*	Personal experience and experience of the others regarding the side effects after getting vaccinated.	A growing body of research literature suggests that personal experience regarding vaccination, in addition to perceived effectiveness and concerns regarding vaccine safety, is the most influential factors in predicting a decision for vaccination (Bertoncello et al., 2020; Rosso et al., 2019; Freeman and Freed, 1999).	Crescitelli et al., 2020; Wilder-Smith et al., 2020; Bertoncello et al., 2020; Rosso et al., 2019; Freeman and Freed, 1999
Attitudes	Emotions	Collective Responsibility	A personal sense of responsibility in achieving collective immunity and contagion prevention	Prosocial individuals generate adaptive and well-adjusted constructive responses to health and safety measures, and take care about the health and safety of others (O'Brien et al., 2021). High level of social responsibility had been associated with the greater intention to get vaccinated against COVID-19 (Yu et al., 2021)	Al Shurman et al. 2021, Aw et al. 2021, Edwards et al. 2021, ECDC Technical Report, Oct 2021, Rieger 2020; O'Brien et al., 2021

Behaviour Drivers Model (BDM) – General population and HCWs					
Level 1 driver (factor)	**Level 2 (dimension)**	**Indicator**	**Indicator definition**	**Rationale for selection**	**Other Literature**
Interests	Feasibility	Alternative health beliefs and worldviews*	Beliefs relying on health practices which are contrary to the established norms around vaccination.	Previous research provide solid proofs that persons believing in alternative medicine practices, and holding anthroposophical worldviews respectively, are more inclined to be vaccine hesitant (Díaz Crescitelli et al., 2020; Bangura et al., 2020; Victor, 2020; Wilder-Smith and Qureshi, 2020). Giving more credibility to alternative medicine, homeopathy, and natural remedies these people consider vaccines as artificial products being harmful, and vaccination as the health practice opposing to their moral views.	Crescitelli et al., 2020; Victor, 2020; Wilder-Smith et al., 2020; Bangura et al., 2020
Limited rationality	Heuristics	Irrational vs.rational thinking	Analytical-rational and intuitive-experiential information processing	Previous research show that vaccine hesitancy is related to thinking styles, namely intuitive decision-making (Brotherton & French, 2014; Jacobson et al., 2007; Leman & Cinnirella, 2007), indicating the important role of emotions in the context of vaccination (Brown et al., 2010; Chapman & Coups, 2006), and suggesting that thinking styles could serve as useful framework in the explanation of vaccine reasoning (Brown et al., 2010; Chapman & Coups, 2006). Intuitive decision-making is concept derived from dual-process theory that explains how people process information in two parallel but interacting channels-the analytically rational and the experientially intuitive thinking style (Epstein et al., 1996). The analytically rational one is more serial, conscious, rule based, changes with new evidence and arguments, and it is relatively free of emotions. The experientially intuitive one is automatic, fast, non-conscious and emotionally charged. Some research show that parents who are more prone to the experientially intuitive thinking style are more vaccine hesitant (Tomljenović et al., 2019). Exploring the association of people motivation to engage in rational or intuitive thinking with vaccine behaviour allows the understanding if people base their judgments and actions regarding vaccination on how they feel about.	Tomljenovic et al., 2020 Reuben et al., 2020 Murphy et al., 2021 Browne et al., 2015 Martinelli et al., 2021 Brown et al., 2010; Chapman & Coups, 2006 (Brotherton & French, 2014 Epstein et al., 1996
Self-efficacy	Self-image	Advocacy for vaccination**	Motivation towards advocacy for vaccination - presents intrinsic motivation to engage in counselling patients to get vaccinated.	Healthcare workers play a critical role in building trust between the public (population) and the immunization program. Healthcare workers, therefore, must be confident in vaccination as a public health good and be able to transmit this confidence to their patients, family, friends, and community members, in other words to advocate for vaccination.	GaëlleVallée-Tourangeau et al., 2018

Behaviour Drivers Model (BDM) – General population and HCWs					
Level 1 driver (factor)	**Level 2 (dimension)**	**Indicator**	**Indicator definition**	**Rationale for selection**	**Other Literature**
Sociological factors					
Social influence	Descriptive norms	Impact on General Attitudes About the Vaccine / Impact on Importance of Getting Vaccinated	Perception of the community members' and significant others' attitudes towards COVID-19 vaccination (refers to a rule of behaviour that people engage in because they think other people in their reference group do the same thing). / Community members' and significant others' opinion regarding the importance of COVID-19 vaccination.	Empirical evidence shows that accurate information about descriptive norms can substantially increase intentions to accept a vaccine (Moehring et al., 2023). Several studies show that participants held more positive vaccination attitudes and greater likelihood to get vaccinated when they were frequently exposed to positive attitudes and frequently discussing vaccinations with family and friends (Konstantinou et al., 2021). On the opposite, vaccination uptake was decreased when significant others were hesitant to take the vaccine.	Bangura et al., 2020; Wilder-Smith et al., 2020; Alabadi et al., 2020 Nurzhynska, A. et al. 2022
Social influence	Injuctive norms	Self-Ranking Social Influencers	Influence of social environment and significant others' opinions on decision to get the COVID-19 vaccinated - a rule of behaviour that people engage in because they think others in their group expect them to do so. It could also be described as a form of social pressure imposed on individuals to engage in certain behaviours	Numerous studies suggest that perception of social support or encouragement regarding vaccination behaviour (whether positive or negative) presents important explanatory factor of the people decision to vaccinate or not (Larson et al., 2014). Lack of perceived social approval of vaccination from social networks, family members, community members, organized groups, institutions or media presents significant barrier to vaccination uptake reported in several studies (Kaufman et al., 2021).	Bangura et al., 2020; Wilder-Smith et al., 2020; Alabadi et al., 2020 Nurzhynska, A. et al. 2022
Social influence	Influence by gatekeepers	Recommendations by HCW	Healthcare professional's recommendation of vaccination and preparedness to address concerns	Recommendations by healthcare professionals as health system gatekeeper presents one of the most influential social factors of people decision on vaccination. Healthcare providers are recognized as having a crucial role in fostering vaccine acceptance and recommendation of vaccination by a healthcare professional was recognized as one of the main predictors of vaccine acceptance (Dube et al., 2015).	Al Shurman et al. 2021, Al-Amer et al. 2021, Aw et al. 2021, Lin et al. 2021 Smith et al., 2007; Dube et al., 2008; Ansari et al., 2007

Behaviour Drivers Model (BDM) – General population and HCWs					
Level 1 driver (factor)	**Level 2 (dimension)**	**Indicator**	**Indicator definition**	**Rationale for selection**	**Other Literature**
Environmental factors					
Communication environment	Factual/ scientific information	Perceived lack of information	Observed lack of information, insufficient or inadequate information about COVID-19 vaccines	In a joint report by WHO and UNICEF in 2015 in 154 WHO member states that were surveyed lack of knowledge or information on vaccines and their benefits was among the top three cited reasons for vaccine hesitancy, while in low- and lower-middle-income countries a lack of knowledge and awareness of the required vaccines, immunization or immunization services were the most frequently cited contributors to vaccine hesitancy (Marti et al., 2017). Similarly, in a large population survey of vaccine hesitancy in Canada, perceived insufficient knowledge about immunization was significantly associated with vaccine hesitancy (Guay et al., 2019).	Aw et al. 2021, Lin et al. 2021
Communication environment	Social media	Use of the Information sources	Attitude toward the usefulness of selected sources of information	Numerous studies suggest that individuals who delay or refuse vaccination are more likely to use internet as their main source of information about vaccines (Smith et al 2011, Dube et al, 2012).	Al Shurman et al, 2021, Al-Amer et al. 2021, Aw et al. 2021
Structural Barriers	Availability, access to and quality of services	Convenience*	The degree to which vaccination services are delivered at a time and place and in a cultural context that is convenient	Structural and health care system factors have been shown to have an important effect in achieving desired immunization rates (Kimmel et al., 1996). According to the "3C" model of vaccine hesitancy developed by WHO, convenience (structural barriers) present one of the most important component of vaccine hesitancy, besides confidence and complacency (MacDonald et al., 2015). This includes physical availability, affordability and willingness-to-pay, geographical accessibility, ability to understand (language and health literacy), the quality of the service (real and/or perceived) and the degree to which vaccination services are delivered at a time and place and in a cultural context that is convenient and comfortable (MacDonald, 2015). Results of numerous studies suggest that perceived logistical barriers (such as inconvenient appointment location or timing) were significantly associated with vaccine refusal (Smith et al., 2017).	Aw et al. 2021, Cascini et al. 2021, Nehal et al. 2021. ECDC Technical Report, Oct 2021, Facilitating COVID-19 vaccination acceptance and uptake in the EU/EEA Nurzhynska, A. et al. 2022
Governing entities	Recognition of the issue	Support from the system	Clear guidelines and recommendations for administering COVID-19 vaccines by authorities	Healthcare workers play important role in the implementation and administration of immunization programmes, so they should be strongly supported and encouraged to recommend vaccination including COVID-19 vaccines.	Vadaparampil et al., 2016

** Psychological drivers that are specifically inquired in population*
*** Psychological driver specifically inquired in healthcare workers*

3. Objectives

The purpose of this research was to identify key behaviour drivers and inform key stakeholders to better understand the factors that influence people's COVID-19 vaccine-related choices and practices in Moldova. The objective was achieved by collecting and analysing data in two groups of respondents: general population and HCWs in Moldova. As per the above applied model and selected drivers (Figure 1 and Table 1) the research questions for both target groups investigated were: (1) Which psychological drivers were significantly associated with COVID-19 vaccine related behaviour in general population /HCWs? (2) Which sociological drivers were significantly associated with COVID-19 vaccine related behaviour in general population /HCWs? (3) Which environmental drivers were significantly associated with COVID-19 vaccine related behaviour in general population /HCWs?

Based on the findings of this research, country-specific actionable recommendations for stakeholders and policy makers were formulated.

4. Methods

4.1 Study design

Two cross-sectional studies were conducted through the collaborative research network of the EHG team, the UNICEF CO Moldova, and the CIVIS team, under the supervision of UNICEF ECARO and the National Agency for Public Health of the Republic of Moldova. The first survey included general population (aged 18 and above) living in Moldova and was conducted from 28 October 2023 to 24 February 2024, using Computer-Assisted Personal Interviewing (CAPI)[20] as a data collection mode. The second survey included HCWs from primary, secondary and tertiary health care level in Moldova and was conducted during the same period using the same methodology (CAPI).

4.2 Ethical considerations

All activities within the project were performed under the ethical principles elaborated in the UNICEF Innocenti discussion paper *Ethical Considerations when Applying Behavioural Science in Projects Focused on Children*. Aside from that, the highest professional ESOMAR (European Society for Opinion and Marketing Research) and ISO (International Organization for Standardization) standards, concerning survey design, data collection, processing and analysis are strictly followed.

Ethical approval was obtained from the National Ethics Committee for Independent Ethical Review, with an approval letter dated 30 August 2023.

The participants were informed of the purposes of the evaluation and data collection activities and of their rights to withdraw from the data collection anytime. Interviewers obtained verbal consent from participants prior to each interview. Study participants were assured by interviewers at the beginning of the interview that their responses would remain anonymous and confidential.

The data were anonymized with two weeks after data are collected (timeframe required for quality control procedures). Key personal identifiable information (name, home address, date of birth) were not kept as part of the survey, although some personal data were collected to assess demographics (age in years, gender, region). In addition, for the study of HCWs, the job category (nurse, doctor, paediatrician, neuropathologist, epidemiologist, etc.) was recorded.

No sensitive information was collected as part of this survey; there were no questions about illegal activities, drug use or sexual behaviour that could lead to legal or reputational problems for the participants.
The participants were treated as being of worth and in a way that is respectful to them as valued individuals irrespective of differences such as gender, race, ethnicity and religious background. All questions were worded so as not to cause any harm (physical or psychological) to participants. Questions about personal practice were worded in a neutral tone so as not to cause harm to anyone.

The platform used for data storage ensured that data is stored directly on a highly secure server for the period of time requested by the client. The server was monitored 24/7. Only two staff members had access to and handled respondents' personal data during the data collection and quality control process. Both staff signed a confidentiality agreement. The hosting server was equipped with the latest version of firewall. All individual information provided was kept strictly confidential. A history of the actions of authorized personnel was also kept. The software uses SSL to secure all operations.

4.3 Sample description

To understand the drivers influencing COVID-19 vaccine-related behaviour, two samples were used targeting two different audiences (general population and HCWs).

A) **Sample – general population**

Multi-stage stratified random sampling was used to select respondents (general population). Stratification was based on the following criteria:

20 Data collection by in-person **(face-to-face)** structured interviewers using tablets to administer the questionnaire and capture the answers.

a. By regions: all regions in Moldova, excluding Transnistrian region (11 regions)

b. By types of settlements: urban/rural

The sample distribution was based on the demographic data based on the official statistics (most resent revised data for 2022 by locality) provided by National Bureau of Statistics[21]. The primary sampling units (PSUs) were settlements.

Sampling of respondents for the category of general population was carried out in five steps.

Step 1 (Selection of survey regions and distribution of sample population)	Based on the demographic data of the National Bureau of Statistics, the share distribution of the country's population by region and type of settlement was calculated. The sample was divided according to the resulting share distribution and is fully consistent with the distribution according to the main criteria stratified at the country/population level.
Step 2 Primary sampling unit (settlement/locality) selection	The settlements (146 localities) from each stratum included in the sample were randomly selected with probability proportional to size (PPS) from each region.
Step 3 Secondary sampling units (SSU)	SSU's within localities included in the sample were randomly selected, using a common rule of selection, based on street name and addresses in urban localities and geographical coordinates in rural localities.
Step 4 Tertiary sampling unit (household)	The households from each sampling unit included in the sample were randomly selected, using a statistical step approach (every 3rd, 4th or 5th). The next household to be visited was identified by adding the step to the number of the first selected household, and so on.
Step 5 Ultimate sampling unit (USU) – respondent	Members of the selected household aged 18 and over. Only one respondent was interviewed per household. The respondent was selected using the "next birthday" procedure from the date of the interview.

Participants were informed of the purpose of the study in the introductory part of the survey, and consent was obtained verbally before completing the questionnaire. Participants were free to stop responding to the survey at any time. Participants received no incentives for their participation to ensure voluntariness. Completing the questionnaire took approximately 20 minutes.

A total of 1033 respondents were interviewed and included in the analysis.

B) **Sample – Healthcare workers (HCWs)**

The survey of health workers was conducted in the same localities as the population survey, but with a proportional distribution of health workers per region and locality, based on official statistics provided by the National Agency for Public Health. Coverage was nationwide, including rural and urban localities (146 localities were covered by the main sampling scheme and 112 additional localities for HCWs), representing about 17% of the total number of localities. The sample universe was the list of all healthcare institutions with number of doctors and nurses per institution. The sample included 354 institutions out of 434 institutions.

A total of 1031 HCWs (doctors and nurses) were interviewed and included in the analysis.

The working languages were Romanian and Russian. Of the total number of HCWs interviewed, 82% were interviewed in Romanian and 18% in Russian. The average length of the interviews was 23 minutes.

21 https://statbank.statistica.md/PxWeb/pxweb/en/20%20Populatia%20si%20procesele%20demografice/20%20Populatia%20si%20procesele%20demografice__POP010__POPro/POP010400rclreg.px/table/tableViewLayout2/?rxid=9a62a0d7-86c4-45da-b7e4-fecc26003802

4.4 Survey instruments

4.4.1 Design

In designing the questionnaire, international standards and best practices, including UNICEF and WHO BI guidance and protocols, and lessons learned from similar work done by UNICEF, WHO and other partners were followed. Desk research was conducted and distinctive clusters of vaccine behaviour drivers for each of two target populations have been identified and selected.

For each cluster, a large number of items (questions) was developed to reflect the theoretically based and identified drivers to cover the entire continuum of vaccination behaviour. Certain items were adapted or adjusted from the previously validated instruments (annexes 2 and 3). In addition, some drivers that had not been quantitatively measured in previous research were operationalized (new items for measuring drivers were defined). Therefore, in order to include these drivers, the additional items were developed specifically for the purpose of this research study and operationalized based on the results of previous qualitative systematic reviews.

In addition to operationalized *drivers (section C)*, the questionnaire contains the *demographic questionnaire* (Section DEM) which includes demographic variables that are considered to be significant determinants of vaccine hesitancy among general population and *items measuring vaccination behaviour (section A)*, representing the outcome variable in this study. These items have been carefully developed according to test theoretical and item-response (e.g. item difficulty) considerations to ensure proper psychometric characteristics.

Content analysis was performed by a panel of experts from the EHG research team, UNICEF Moldova, UNICEF ECARO and the National Agency for Public Health Moldova. The relevance and accuracy of the items were evaluated during several panel meetings; the items were adapted where necessary until consensus was reached.

To determine cross-cultural relevance and applicability to the context of Moldova, a systematic translation and cross-cultural evaluation of the instrument was conducted. The original version of the instrument was translated from English to Romanian and Russian following the forward-backward translation procedure. Conceptual and semantic equivalence assessment during this phase aimed to assure that, after the translation, the meaning of each item stays the same, and that the instruments in diverse languages are measuring identical theoretical constructs. This version of the questionnaire was used for the back-translation process. The back-translations were reviewed and compared with the English forms resulting in the versions on which the face validity was examined.

Face validity was tested in a pilot study. The questionnaire was disseminated among a group of 15 members of an appropriate target population from 11 localities to assess clarity and comprehension of the items, by providing participants a checklist for the evaluation of each item. The following criteria were used for evaluating face validity: appropriateness, the clarity and unambiguity of items, the correct structuring of the sentences, appropriateness of font size, adequacy of instruction on the instrument, the structure of the instrument in terms of construction and format, appropriateness of difficulty level of the instrument for the participants, and reasonableness of items. Approaching agreement that the items were clear and easy to understand resulted in the final version of the questionnaire.

4.4.2. Variables

4.4.2.1 General Population

The comprehensive instrument employed in the study of respondents' COVID-19 vaccine related behaviour and vaccine behaviour drivers included:

1) **Socio-demographic** part with ten items inquiring: respondents' gender, age, education level, employment status, financial status, marital status, type of settlement, region, presence of chronic diseases and general health assessment.

   Vaccination behaviour (outcome variable) was evaluated by a single item assessing COVID-19 vaccination status, with five responses: Not vaccinated/One dose (incomplete)/One dose (complete)/Two doses (complete)/Three or more doses.

   Behaviour drivers for COVID-19 vaccination included three sections:

2) **Psychological drivers**

2a) *Attitudes towards vaccine efficacy* measured by four questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.65). Higher score indicated more positive beliefs regarding COVID-19 vaccines efficacy.

2b) *Attitudes towards vaccine safety* measured by four questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.80). Higher score indicated more positive beliefs regarding COVID-19 vaccines safety.

2c) *Perceived danger of disease and likelihood of infection* measured by three questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.64). Higher score indicated perception of the higher danger of COVID-19 diseases and higher likelihood of infection.

2d) *Perceived societal trust* measured by five questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.79). Higher score indicated greater trust in societal factors.

2e) *Trust in different information sources* was evaluated by fourteen items inquiring trust in selected sources of information regarding COVID-19 vaccines: scientific literature, national TV channels, regional TV channels, internet portals, YouTube channels, social networks (Facebook, Viber, WhatsApp), family, friends, your doctor, healthcare professionals in the media, religious leaders, central public authorities, local authorities, international organizations (WHO, UNICEF, CDC). Each item was assessed on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Higher score indicated higher trust in certain source of information.

2f) *Beliefs related to perceived collective responsibility* was evaluated by three questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Higher score indicated stronger sense of personal responsibility.

2g) *Personal experience* was evaluated by two questions assessing direct and indirect past experience with serious adverse reaction to COVID-19 vaccine, using five-point agreement Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree".

2h) *Conspiracy beliefs* were evaluated with seven questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.90). Higher score indicated stronger inclination to conspiracy beliefs.

2i) *Thinking styles* were measured using a short form of the Rational-Experiential Inventory (REI-10) evaluating rational (Need for cognition) and experiential (Faith in Intuition) styles (Epstein, 1973). Higher scores indicated greater motivation for rational, and experiential thinking style respectively.

3) **Sociological drivers**

3a) *Descriptive norms* were assessed on a five-point Likert scale (ranging from 1 "very negative" to 5 "very positive") items inquiring impact that various social influencers (family, friends, local leaders, National Health Authorities (Ministry of Health, National Agency for Public Health), people from the community/neighbourhood, religious leaders, healthcare providers, central public authorities (government, parliament, president) have on respondents' general attitudes about COVID-19 vaccination.

3b) *Injunctive norms* were assessed asking participants to pick three of the listed social influencers (family, friends, local leaders, National Health Authorities (Ministry of Health, National Agency for Public Health), respondent, community members, religious leaders, healthcare providers, central public authorities (government, parliament, president), media) and rank them from 1 (highest) to 3 (lowest) in order of influence.

3c) *Influence by gatekeepers* was evaluated with three questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.72).

4) **Environmental drivers**

4a) *Perceived lack of information* was evaluated with four questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.81). Higher score indicated stronger feeling of the lack of information;

4b) *Use of the information sources* was evaluated by fourteen questions inquiring frequency of use of selected sources of information regarding COVID-19 vaccines: scientific literature, national TV channels, regional TV channels, internet portals, YouTube channels, social networks (Facebook, Viber, WhatsApp), family, friends, your doctor, healthcare professionals in the media, religious leaders, central public authorities, local authorities, international organizations (WHO, UNICEF, CDC). Each item was assessed on five-point Likert scale ranging from 1 "never" to 5 "regularly". Higher score indicated higher frequency of use of certain source of information.

4c) *Structural barriers* were evaluated with six questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.89). Higher score indicated stronger structural barriers.

4.4.2.2 Healthcare workers

The comprehensive instrument employed in the study of HCWs' COVID-19 vaccine related behaviour and vaccine behaviour drivers included:

1) **Socio-demographic** part with nine items inquiring: gender, age, level of healthcare where HCW is working, profession (physician/nurse), field of specialisation, years of practice, type of settlement (urban/rural), level of the health institution, region, and presence of chronic diseases.

2) **COVID-19 vaccination behaviour** (outcome variable) of HCWs' was evaluated in two aspects; vaccination behaviour in professional context and private vaccination behaviour.

2a) Vaccination behaviour in professional context was assessed by five questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". The items were subjected to Principal Component Analysis with Varimax rotation and one factor with eigenvalue 3.55 explaining 71.05% of the variance were extracted, denoting vaccine promotion behaviour.

2b) Private vaccination behaviour was evaluated by a single question assessing COVID-19 vaccination status, with five responses: Not vaccinated/One dose (incomplete)/One dose (complete)/Two doses (complete)/Three or more doses.

Behaviour drivers for COVID-19 vaccination included three sections:

3) **Psychological drivers**

3a) *Attitudes towards vaccine efficacy* was measured by four questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.61). Higher score indicated more positive beliefs regarding COVID-19 vaccines efficacy.

3b) *Attitudes towards vaccine safety* was measured by four questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.78). Higher score indicated more positive beliefs regarding COVID-19 vaccines safety.

3c) *Perceived danger of disease and likelihood of infection* was measured by three questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Due to low reliability, one question (C1.3.3) was not included in the score calculation (α=0.63). Higher score indicated perception of a higher danger of COVID-19 disease.

3d) *Perceived societal trust* was measured by five questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.81). Higher score indicated greater trust in societal factors.

3e) *Trust in different information sources* was evaluated by twelve items inquiring HCWs' trust in selected sources of information about COVID-19 vaccines: Continual Medical Education (CME) on vaccines, international scientific and professional conferences, national scientific and professional conferences, national scientific literature, international scientific literature, publications and guidelines of relevant national institutions and organizations, publications and guidelines of relevant international organizations, public media, colleagues, social networks, National Health Authorities (Ministry of Health, National Agency for Public Health), international organizations (WHO, UNICEF, CDC). Each item presented a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Higher score indicated higher trust in certain source of information.

3g) *Conspiracy beliefs* were evaluated with seven questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.89). Higher score indicated stronger inclination to conspiracy beliefs.

3h) *Beliefs related to perceived responsibility* was evaluated by two questions assessing perceived responsibility related to patients' COVID-19 vaccination decisions and perceived duty to advise patients to get vaccinated against COVID-19, using five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Higher scores indicated stronger sense of perceived responsibility.

3i) *HCWs' advocacy for vaccination* was measured by the Motivation for advocacy scale (MovAd) (Vallée-Tourangeau et al., 2018) consisting of eleven questions on a five-point Likert-scale (α=0.91) classified in four dimensions: the sentiment that vaccination advocacy is important, the sentiment that it is impactful, the feeling of knowing how to advocate for vaccination, and the sentiment of autonomy regarding the decision to advocate for vaccination.

4) **Sociological drivers**

4a) *Descriptive norms- impact on general attitudes regarding vaccination* were assessed by five-point Likert scale (ranging from 1 "very negative" to 5 "very positive") items inquiring impact that various social influencers (family, friends, local public authorities, National Health Authorities (Ministry of Health, National Agency for Public Health), respondents themselves, people from the community/neighbourhood, religious leaders, colleagues, central public authorities (government, parliament, president) have on HCWs' general attitudes about vaccination.

4b) *Descriptive norms- impact on importance of getting vaccinated against COVID-19* were assessed by a five-point Likert scale (ranging from 1 "not at all important" to 5 "extremely important") items inquiring HCW's beliefs regarding various social influencers' (family, friends, local public authorities, National Health Authorities (Ministry of Health, National Agency for Public Health), respondents themselves, people from the community/ neighbourhood, religious leaders, colleagues, central public authorities (government, parliament, president)) attitudes regarding importance of getting vaccinated against COVID-19.

4c) *Injunctive norms* were assessed asking HCWs to pick three of the listed social influencers (family, friends, local public authorities, National Health Authorities (Ministry of Health, National Agency for Public Health), respondents themselves, people from the community/ neighbourhood, religious leaders, colleagues, central public authorities (government, parliament, president) and media (TV, radio, newspaper, internet)), and rank them from 1 (highest) to 3 (lowest) in order of influence.

5) **Environmental drivers**

5a) *HCWs perception of lack of information* was evaluated with three questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.93). Higher score indicated stronger feeling of the lack of information.

5b) *HCWs use of information sources* was evaluated by eleven items inquiring frequency of use of selected sources of information regarding COVID-19 vaccines: Continual Medical Education (CME) on vaccines, international scientific and professional conferences, national scientific and professional conferences, national scientific literature, international scientific literature, publications and guidelines of relevant national institutions and organizations, publications and guidelines of relevant international organizations, public media, colleagues, social networks, National Health Authorities (Ministry of Health, National Agency for Public Health), international organizations (WHO, UNICEF, CDC). Each item was assessed on five-point Likert scale ranging from 1 "never" to 5 "regularly". Higher score indicated higher frequency of use of certain source of information.

5c) *HCWs perception of the support from the system* was evaluated with five questions on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree" (α=0.89). Higher score indicated perception of a higher system support regarding COVID-19 vaccination

4.5 Procedures

4.5.1 Fieldwork

The following categories of personnel were involved in the data collection: field manager, assistance to field manager, regional supervisors, and interviewers. They were selected on the basis of their qualifications, communication skills, field experience, and knowledge of the area in which the research was conducted. Based on the defined criteria, the following staff were recruited: one field manager, 2 assistants to field manager, 4 regional supervisors and 73 interviewers.

The work of the interviewers was monitored by regional supervisors, who were familiar with the region to which they were assigned. The supervisors monitored the work of the assigned interviewers and were responsible for field work control. They all received specific project-related training, as described below. All interviewers received the training, which also served as a screening process for qualified interviewers. The role of the supervisor was crucial in ensuring that interviewers met the high standards expected for this study. As such, defined common standards for supervision were set and supervisors were responsible for:

- Ensuring that all interviewers assigned to the project have the necessary knowledge and experience to work on the study,
- Ensuring that all interviewers attend the interviewer briefing and read the training materials,
- Supervising interviewers during data collection and providing feedback on their performance.
- Preparing the survey strategy, particularly with regard to the specificity of his/her region
- Carry out the selection of survey units, together with the interviewers (according to the instructions)
- Visiting several households together with the interviewer during the initial phase of the interview
- Controlling the accuracy of filling in the questionnaires (electronic form)
- Controlling work of the interviewers in the chosen households (minimum 10% of the sample).

All supervisors reported to the assistant field manager on a daily basis. Field manager was responsible for coordinating the fieldwork, including pre-testing the questionnaire, conducting the training of supervisors and interviewers, providing additional explanations to supervisors and interviewers in the event of challenges in the field, and preparing weekly fieldwork reports. Assistants to field managers were responsible for selecting interviewers, assisting interviewers as required, and collecting and checking materials and completed questionnaires from the fieldwork.

4.5.2 Engagement

Five project partners contributed to the achievement of the project goals: UNICEF Regional Office for Europe and Central Asia (ECARO), UNICEF Moldova country office, the national Agency for Public Health under the Ministry of Health of the Republic of Moldova, Euro Health Group, Denmark and CIVIS research agency, Moldova.

Conceptualization of the research and research methodology was developed by Euro Health Group, Denmark in consultation with UNICEF ECARO, UNICEF Moldova country office, and the National Agency for Public Health, as a key partner. Data collection process was prepared and conducted by CIVIS research agency, Moldova, supported by Euro Health Group, Denmark, and supervised by the UNICEF Moldova country office and the National Agency for Public Health. Data analysis and research report development was carried out by the Euro Health Group team. Overall coordination and supervision of the research was led by UNICEF ECARO.

4.5.3 Training for the fieldwork

Training sessions were organised in preparation for the fieldwork. The first training took place before the pilot survey, followed by 15 trainings in preparation for the main fieldwork. Interviewers were trained in small groups (up to 10 persons). The trainings were conducted by the national research agency CIVIS and supervised by the UNICEF country office in Moldova. Euro Health Group provided online support and guidance.

All research staff were briefed on the aims and objectives of the study, the method of sampling respondents and were given detailed instructions on how to conduct field data collection, with particular attention to contact data and quality control procedures. All questionnaires were carefully studied/reviewed to ensure that there was a common understanding of the meaning of the question and how it logically related to other questions. How interviewers should deal with refusals and 'don't knows' was also discussed. The training covered potential challenges and how to deal with different situations during data collection. Tablets and paper questionnaires were used in the training. The interviewers were provided with tablets and information on the technical features of the tablets and how to transfer the data to the server. During the training, interviewers also conducted mock interviews.

4.5.4 Pilot testing

The pilot survey was conducted to test all methods and procedures (including all questionnaires and interviewers), the clarity and applicability of the designed instruments, the comprehensiveness of the questions and the time required for responses.

The pilot was conducted in 11 localities (5 villages[22] and 6 towns[23]) from 20 to 26 September 2023. Seventeen face-to-face interviews were conducted in both Romanian and Russian (7 with HCWs and 10 with general population). Nine interviewers were involved in the pilot.

The pre-test was also used to gather interviewer feedback on the survey administration process and to ensure that the length of the survey did not lead to respondent fatigue and dropout. All interviewers assigned to the pre-test were trained, which included the background to the survey, the purpose of the pre-test exercise, the contact procedures, the I-pads with the questionnaire application and the type and format of feedback required.

The pilot report detailed key feedback from the interviewer questionnaires and challenges encountered, and provided clear recommendations for the main fieldwork phase, including actionable solutions to potential problems. The research tools were revised and finalised in consultation with the Euro Health Group team, the National Agency for Public Health and the UNICEF Moldova country office, based on the results of the testing.

4.5.5 Organisation of field work

For the survey with HCWs each health institution was contacted prior to the interviewers' visit to obtain permission to interview HCWs and to schedule the interviewers' visits. Where possible, the list of HCWs scheduled to work on the day of the visit was obtained in advance.

In the survey of population, once eligible respondents had been identified, interviewers proceeded with the interview after the respondent had explicitly agreed to participate. No substitutions could be made once the individual had been selected. Wherever possible, the interview was conducted immediately. If the respondent was unavailable, the interview was rescheduled for another day or time and the interviewer visited the household again (up to three visits at different times). If the person refused to be interviewed, the interviewer went to the reserve household. All visits were recorded on the route registration form, including the time and outcome of the visit.

4.5.6 Quality assurance mechanisms for data collection

In order to ensure the quality of the data and to apply a unique methodology, the data collection process was standardised. This was ensured by: developing guidelines for the preparation and organisation of the survey, developing appropriate methodological guidelines for data collection (filling in the questionnaires), supervising the interview process, close cooperation and daily communication between supervisors and their teams of interviewers, reviewing the collected data on a daily basis, data processing.

Multi-staged control was applied:

- **GPS positioning:** Each interviewer was provided with a geo-locating equipment to identify the coordinates of the household being interviewed. The coordinates were sent to the head office and checked online by CIVIS's technical specialist. The geolocating equipment allowed

22 Colicauti, Baimaclia, Susleni, Cociulia, Balatina
23 Chisinau, Balti, Codru, Cahul, Cantemir, Comrat

the company to control the interviewers' routes and movements in the surveyed areas and to compare the entered addresses and names of the mahallas with the GPS coordinates.

- **Actual interview checks:** Audio control of interviews was conducted at 100% of the sample. During the control, the actual interview process was checked and the duration of the interview. Telephone checks were conducted in 30% of interviewed households which provided the telephone number. Random control in the filed was done for 15% of interviewed households.
- **Automated 100% control:** An automated 100% check was carried out using a mobile application. When designing a data collection form, logical and arithmetic checks are included wherever possible. These procedures helped to minimise input errors at the data collection stage, and also allowed for the verification of questionnaires that deviated significantly from the average time.

During the data collection, data were monitored for internal consistency on a daily basis. Incorrect, suspicious or non-compliant questionnaires were rejected and were not included in the final database. A weekly fieldwork update was provided by ITA FAKT to the EHG and UNICEF country office with an overview of progress and a brief written summary of any issues that arose and how they were being addressed.

As a result of the quality control measures described above, 62 interviews were rejected, mainly because of the short length of the interview (45 interviews), and 17 respondents did not confirm participation in the survey.

4.6 Data analysis

4.6.1 General population

Reliability coefficients were calculated for each group of items assessing the different drivers. In cases where reliability was good enough the total score for the drivers measured by Likert scale was calculated by summing the responses to the items belonging to certain scale and dividing that sum with the number of items. Items with a negative connotation were reversely coded when calculating the total scores. In order to describe the prevalence of certain drivers, the total score range for each scale was divided in four quartiles: 1-1.99 (highly negative), 2-2.99 (moderately negative), 3-3.99 (moderately positive) and 4-5 (highly positive). Percentages, means and standard deviations were used to present these results.

Categorical variables were presented as frequencies and percentages. Original responses for two categorical variables (level of education and vaccination behaviour) were reduced to a smaller number of categories. Level of education was merged into 1) less than primary/primary education, 2) secondary education, 3) graduate and postgraduate education. Vaccination behaviour was also collapsed into four groups: 1) vaccine refusing, 2) incompletely vaccinated, 3) completely vaccinated with one or two doses, and 4) those who took three or more doses. In the regression analysis age was used as continuous variable, but in order to illustrate the differences in vaccination behaviour it was divided into four categories: 1) 18-34, 2) 35-49 3) 50-64 and 4) 65+.

The Mann-Whitney U or Kruskal-Wallis test was used to determine how respondents from different socio-demographic groups differ in their perceptions of the different drivers of vaccination behaviour.

Two binary logistic regression models were constructed to estimate the behaviour drivers by comparing vaccine refusing with those who took three or more doses, and comparing vaccine refusing with completely vaccinated. In order to include categorical variables with multiple values in the regression models dummy variables were created. Variables exhibiting significant associations in univariate analyses ($p < 0.05$) were then used in multivariate analyses.

All analyses were performed in Statistical Package for Social Sciences (SPSS) for Windows, version 25 (IBM Corp., Armonk, NY) and $p < 0.05$ was considered statistically significant.

4.6.2 Healthcare workers

Reliability coefficients were calculated for each group of items assessing the different drivers. In cases where reliability was good enough the total score for the drivers measured by Likert scale was calculated by summing the responses to the items belonging to certain scale, and dividing that sum

by the number of items. Items with negative connotation were reversely coded when calculating the total scores. In order to describe the prevalence of certain drivers, the total score range for each scale was divided in four quartiles: 1-1.99 (highly negative), 2-2.99 (moderately negative), 3-3.99 (moderately positive) and 4-5 (highly positive). Percentages, means and standard deviations were used to present these results.

Categorical variables were presented as frequencies and percentages. Original responses for one categorical variable (specialization) were reduced to two categories: 1) general practitioner and 2) other specializations. Vaccination behaviour was also collapsed into four groups: 1) vaccine refusing, 2) incompletely vaccinated, 3) completely vaccinated with one or two doses, and 4) those who took three or more doses.

Differences in COVID-19 vaccine promotion behaviour between HCWs exhibiting diverse private COVID-19 vaccine behaviour were assessed using Kruskal-Wallis test. In order to establish how HCWs belonging to diverse socio-demographic groups differ in their perception of various COVID-19 vaccination behaviour drivers, the Mann-Whitney U or Kruskal-Wallis test is used.

The association between different groups of drivers (psychological, sociological and environmental) and COVID-19 vaccination related behaviour was assessed with linear regression analysis. Multivariate analysis contained variables that were significant in univariate analyses ($p < 0.05$).

All analyses were performed in Statistical Package for Social Sciences (SPSS) for Windows, version 25 (IBM Corp., Armonk, NY) and $p < 0.05$ was considered statistically significant.

4.7 Limitations of the research

The team identified several limitations to the research:

- A cross-sectional study cannot assess possible causality between a predictor variable (behavioural drivers) and an outcome variable (vaccine behaviour).
- Limitations of self-reported vaccination decision estimates include the possibility of recall bias and social desirability bias. As the study was based on self-reported data, there may have been some over- and under-reporting of vaccination status and attitudes. However, the study could not control for reporting bias, whether intentional or not.
- The number of incompletely vaccinated respondents was only 32 (3.1%), which is significantly smaller than the numbers of unvaccinated (49.5%, n=511), completely vaccinated 25.6% (n=264) and those who took three or more doses 103 (9.9%), making comparisons between groups less suitable. For the purpose of determining predictors of vaccination behaviour, unvaccinated and incompletely vaccinated were merged into one category.
- Majority of interviewed HCWs were females (85.5%), which indicates the high possibility of gender bias. Therefore, conclusions related to gender differences among HCWs should be taken with caution.

The following challenges were encountered during the data collection process, some of which directly led to a prolongation of the data collection carried out by the national agency CIVIS in Moldova.

- COVID-19 survey fatigue resulted in a number of refusals and /or dropouts from the general population, which prolonged the data collection process.
- Discrepancies between the number of doctors present in the health facilities and the information provided by the facilities. In addition, the exact lists of specialists per health facility were not available, so the approximate distribution was based on the total number of specialists per health facility. This resulted in some facilities having fewer specialists than expected. In addition, some specialists (such as paediatricians and neurologists) rotate between different facilities (both public and private) and were not available during the visit of the interviewer.
- Busy schedules of HCWs and arrival of patients during the interviews, which often led to interruption of the interviews and longer time needed for questionnaire completion.
- The flu season affected data collection in two ways: by increasing the number of patients attending health facilities, leaving HCWs with no time to participate in the survey, and by

interviewers falling ill during the data collection process.

- Bad weather conditions (rain, snow, cold, short day) during the fieldwork affected and delayed the work of the interviewers. In addition, the tablets discharged quickly. To mitigate these problems, mobile teams were deployed using tablet power banks.

All challenges were timely reported and discussed among the research team and mitigating actions agreed and implemented.

5. Results of the Research on General Population

5.1 Description of the sample of general population

More than half of the respondents were female (56.0%, n=578), and their age ranged from 18 to 94 years. Around half of them had completed secondary education (52.8%, n=545), and just over a quarter had higher education (25.7%, n=265). Most participants were full time employed (34.0%, n=351) or retired (30.4%, n=314) and described their financial situation as average (55%, n=569). The majority of respondents were married (58.4%, n=603) and more than half lived in rural areas (55.8%, n=577). One third of respondents reported having a chronic disease (33%, n=341) and the majority assessed their general health status as average (45.8%, n=473) or good (37.1%, n=383).

Table 2. Description of the sample of general population

Variables	N (1033)	%
Gender		
Male	455	44.0
Female	578	56.0
Age		
18-34	215	20.8
35-49	267	25.9
50-64	286	27.7
65+	265	25.6
Education		
Less than primary and primary education	223	21.6
Secondary education	545	52.8
Graduate and postgraduate education	265	25.7
Employment		
Unemployed	175	16.9
Part-time employed	120	11.6
Full-time employed	351	34.0
Self-employed	35	3.3
Student	39	3.8
Retired	314	30.4
Financial situation		
Very good	16	1.6
Good	194	18.7
Average	569	55.0
Bad	199	19.3
Very bad	55	5.3
Relationship status		
Single	189	18.3
Married	603	58.4
Divorced	72	7.0
Widowed	164	15.8
Other	5	0.5
Region		
Mun. Chisinau	242	23.5

Variables	N (1033)	%
North	311	30.1
Center	294	28.4
South	186	18.0
Settlement		
Urban	456	44.2
Rural	577	55.8
Chronic disease		
Yes	341	33.0
No	692	67.0
General Health Assessment		
Very good	66	6.4
Good	383	37.1
Average	473	45.8
Bad	92	8.9
Very bad	19	1.8

5.2 COVID-19 related vaccination behaviour in general population

Around half of the participants (49.5%, n=511) reported that they had not been vaccinated against COVID-19, one quarter (25.6%, n=264) were completely vaccinated with two doses, 11.9% (n=123) were completely vaccinated with one dose, while 3.1% (n=32) were incompletely vaccinated with one dose. Only 9.9% (n=103) received three or more doses of a COVID-19 vaccine (booster).

The same proportion of male (49.5%, n=225) and female (49.5%, n=286) respondents were not vaccinated against COVID-19. While 4.7% (n=10) of those aged 18-34 years had received three or more doses of the COVID-19 vaccine, 9.7% (n=26) of those aged 35-49 years, 10.8% (n=31) of those aged 50-64 years and 13.6% (n=36) of those 65 and older had received booster doses. With respect to education level, 65.5% (n=146) of those with less than primary/primary education, 51.3% (n=280) of those with secondary, and 32.5% (n=86) of those with graduate and postgraduate education were nor vaccinated. Vaccination against COVID-19 was refused by 54.5% (n=103) single, 47% (n=284) married, 51.4% (n=37) divorced and 51.2% (n=84) of widowed respondents.

While 42.2% (n=193) of respondents living in urban areas were not vaccinated, the percentage of vaccine refusing in rural areas was 55.2% (n=319). The proportion of vaccine refusing was 35.5% (n=86) in Chisinau, 53.4% (n=166) in northern parts, 54.8% (n=161) in Center and 53% (n=98) in South. While 14.1% (n=48) of those with chronic diseases received three or more doses of COVID-19 vaccine, 7.9% of those without chronic diseases received booster doses.

Table **3. Description of COVID-19 vaccination behaviour in general population according to different socio-demographic characteristics**

Socio-demographic characteristics						
		Not vaccinated	Incompletely vaccinated with one dose	Completely vaccinated with one or two doses	Three doses and more	Total
		N (%)	N (%)	N (%)	N (%)	N (%)
Gender	Male	225 49.5%	12 2.6%	170 37.4%	48 10.5%	455 100.0%
	Female	286 49.5%	20 3.5%	217 37.5%	55 9.5%	578 100%

Socio-demographic characteristics						
		Not vaccinated	Incompletely vaccinated with one dose	Completely vaccinated with one or two doses	Three doses and more	Total
		N (%)	N (%)	N (%)	N (%)	N (%)
Age	18-34	119 55.3%	6 2.8%	80 37.2%	10 4.7%	215 100.0%
	35-49	125 46.8%	12 4.5%	104 39.0%	26 9.7%	267 100.0%
	50-64	134 46.9%	9 3.1%	112 39.2%	31 10.8%	286 100.0%
	65+	134 50.6%	4 1.5%	91 34.3%	36 13.6%	265 100.0%
Education level	Less than primary and primary education	146 65.5%	3 1.3%	60 26.9%	14 6.3%	223 100.0%
	Secondary education	280 51.3%	23 4.2%	197 36.1%	46 8.4%	546 100.0%
	Graduate and postgraduate education	86 32.5%	6 2.3%	130 49.1%	43 16.2%	265 100.0%
Marital status	Single	103 54.5%	4 2.1%	74 39.2%	8 4.2%	189 100.0%
	Married	284 47.0%	21 3.5%	229 37.9%	70 11.6%	604 100.0%
	Divorced	37 51.4%	2 2.8%	28 38.9%	5 6.9%	72 100.0%
	Widowed	84 51.2%	5 3.0%	55 33.5%	20 12.2%	164 100.0%
Settlement	Urban	193 42.2%	12 2.6%	199 43.5%	53 11.6%	457 100.0%
	Rural	319 55.2%	21 3.6%	188 32.5%	50 8.7%	578 100.0%
Region	Mun. Chisinau	86 35.5%	7 2.9%	119 49.2%	30 12.4%	242 100.0%
	North	166 53.4%	8 2.6%	104 33.4%	33 10.6%	311 100.0%
	Center	161 54.8%	10 3.4%	91 31.0%	32 10.9%	294 100.0%
	South	98 53.0%	7 3.8%	73 39.5%	7 3.8%	185 100.0%
Chronic disease	Yes	156 45.9%	12 3.5%	124 36.5%	48 14.1%	340 100.0%
	No	355 51.3%	20 2.9%	262 37.9%	55 7.9%	692 100.0%

Even 83% (n=526) of the unvaccinated and under vaccinated with one dose reported that they would not consider getting vaccinated against COVID-19, and 81.4% (n=517) reported that it is unlikely that they will get vaccinated against COVID-19. Only 15.5% (n=5) of incompletely vaccinated with one dose agreed or strongly agreed that they would get a COVID-19 booster.

Table 4. Distribution of the intention to get the COVID-19 vaccine in general population

Vaccination Intention					
	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
Items	N (%)	N (%)	N (%)	N (%)	N (%)
B1.1 I am considering getting vaccinated against COVID-19. (N=634)	396 62.4%	130 20.6%	52 8.2%	38 6.0%	18 2.9%
B1.2 I will most likely get vaccinated against COVID-19. (N=634)	383 60.3%	134 21.1%	65 10.2%	36 5.7%	17 2.6%
B1.3 I will get a COVID-19 booster dose. (N=32)	10 32.5%	8 24.2%	9 27.8%	5 15.5%	0 0.0%

5.3 Psychological factors

According to the BDM, psychological factors refer to individual cognitive and emotional drivers of health behaviours. Applying the criteria described in Section 2, we selected 8 indicators of psychological factors related to COVID-19 vaccination behaviour: perceived vaccine efficacy, perceived vaccine safety, perceived danger of disease and likelihood of infection, trust in societal factors, trust in information sources, perceived collective responsibility, personal experience and conspiracy beliefs.

5.3.1 Perception of COVID-19 vaccine efficacy in general population

In general, respondents' attitudes towards the efficacy of COVID-19 vaccines were moderately negative (Mean=2.69, SD=0.91).

Around a third of the respondents (34.6%, n=343) agreed or strongly agreed that vaccines against COVID 19 are effective, and 32.6% (n=325) agreed or strongly agreed that vaccination was the only way to stop the COVID-19 pandemic. Nearly half (46.5%, n=449) agreed or strongly agreed that the COVID-19 epidemic would have lasted as long as it did, with or without the vaccines. In general, 58.4% (n=580) shared the opinion that there is not enough evidence that the COVID-19 vaccines really protect against the infection. Among respondents who had received three or more doses, 72.5% (n=71) agreed or strongly agreed that vaccines against COVID 19 are effective, whereas this belief was less supported among those who were completely vaccinated (53%, n=199), had received one dose (46.7%, n=14) or who had refused vaccination (12.2%, n=59). Similarly, while 69.3% (n=68) of those who had received three and more doses and 48.5% (n=181) of those who were completely vaccinated believed that vaccination was the only way to stop the COVID-19 pandemic, 34.4% (n=11) incompletely vaccinated and 13.1% (n=65) vaccine refusing respondents shared this view. Around half of unvaccinated (51.5%, n=148) and incompletely vaccinated respondents (53.1%, n=17) supported the belief that the COVID-19 epidemic would last as long as it lasts, with or without the vaccines, followed by 42.6% (n=151) completely vaccinated and 33.6% (n=33) of those who received three or more doses.

Table 5. Distribution of general population's scores on individual items of attitudes towards COVID-19 vaccine efficacy according to vaccination behaviour

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.1.1 Overall, I think that vaccines against COVID 19 are effective.	Strongly disagree	187 38.5%	6 20.0%	40 10.6%	6 6.1%	239 24.1%
	Disagree	137 28.2%	6 20.0%	50 13.3%	7 7.1%	200 20.2%
	Neither disagree nor agree	103 21.2%	4 13.3%	87 23.1%	14 14.3%	208 21.0%
	Agree	50 10.3%	11 36.7%	136 36.2%	43 43.9%	240 24.2%
	Strongly agree	9 1.9%	3 10.0%	63 16.8%	28 28.6%	103 10.4%
	Total	486 100.0%	30 100.0%	376 100.0%	98 100.0%	990 100.0%
C1.1.2 Vaccination was the only way to stop the COVID-19 pandemic.	Strongly disagree	170 34.4%	7 21.9%	49 13.1%	7 7.1%	233 23.4%
	Disagree	169 34.2%	6 18.8%	71 19.0%	12 12.2%	258 25.9%
	Neither disagree nor agree	90 18.2%	8 25.0%	72 19.3%	11 11.2%	181 18.2%
	Agree	49 9.9%	8 25.0%	119 31.9%	46 46.9%	222 22.3%
	Strongly agree	16 3.2%	3 9.4%	62 16.6%	22 22.4%	103 10.3%
	Total	494 100.0%	32 100.0%	373 100.0%	98 100.0%	997 100.0%
C1.1.3 In my view the epidemic of COVID-19 would have lasted as long as it lasted, with or without the vaccines.	Strongly disagree	53 11.0%	4 12.5%	46 13.0%	12 12.2%	115 11.9%
	Disagree	86 17.9%	5 15.6%	80 22.6%	30 30.6%	201 20.8%
	Neither disagree nor agree	94 19.5%	6 18.8%	77 21.8%	23 23.5%	200 20.7%
	Agree	142 29.5%	8 25.0%	101 28.5%	22 22.4%	273 28.3%
	Strongly agree	106 22.0%	9 28.1%	50 14.1%	11 11.2%	176 18.2%
	Total	481 100.0%	32 100.0%	354 100.0%	98 100.0%	965 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.1.4 In my opinion there is not enough evidence that the COVID-19 vaccines really protect against the infection.	Strongly disagree	42 8.6%	4 12.9%	38 10.2%	14 14.0%	98 9.9%
	Disagree	61 12.5%	3 9.7%	64 17.1%	16 16.0%	144 14.5%
	Neither disagree nor agree	81 16.6%	5 16.1%	67 17.9%	19 19.0%	172 17.3%
	Agree	152 31.1%	10 32.3%	130 34.8%	37 37.0%	329 33.1%
	Strongly agree	153 31.3%	9 29.0%	75 20.1%	14 14.0%	251 25.3%
	Total	489 100.0%	31 100.0%	374 100.0%	100 100.0%	994 100.0%

Respondents who had received three or more doses (Mean=3.33) and completely vaccinated (Mean=3.01) were significantly more likely to believe that the vaccine was effective than those who were incompletely vaccinated (Mean=2.69) and those who had refused the vaccine (Mean=2.32).

Table 6. Differences in attitudes towards COVID-19 vaccine efficacy between the general population's members exhibiting different vaccine behaviour

Vaccine behaviour	N	Mean	SD	Min	Max	p
Not vaccinated	482	2.32	0.79	1.00	4.25	< 0.001
Incompletely vaccinated	28	2.69	0.66	1.50	3.50	
Completely vaccinated (one or two doses)	353	3.01	0.89	1.00	5.00	
Three and more doses	99	3.33	0.80	1.25	5.00	

Attitudes towards COVID-19 vaccine efficacy were getting more favourable with older age (p<0.01). People with graduate and postgraduate education had more positive attitudes towards COVID-19 vaccine efficacy compared to those with less than primary/primary and secondary education (Mean=2.85 vs. Mean=2.64, Mean=2.63, respectively; p<0.01). People living in the central part of the country had less favourable attitudes towards the efficacy of the COVID-19 vaccine, than people living in Chisinau, North and South (Mean=2.57 vs. Mean=2.81, Mean=2.72, Mean=2.68, respectively; p<0.05). People with chronic disease perceived the vaccine to be more effective than those without chronic disease (Mean=2.78 vs. Mean=2.64, respectively; p<0.05). There were no differences in attitudes towards COVID-19 vaccine efficacy with respect to gender, and type of settlement.

Table 7. Differences in perception of COVID-19 vaccine efficacy between diverse groups of members of general population

		N	Mean	SD	Min	Max	p
Gender	Male	405	2.68	0.95	1.00	5.00	0.569
	Female	499	2.70	0.88	1.00	5.00	
Age	18-34	195	2.63	0.90	1.00	5.00	<0.01
	35-49	246	2.56	0.82	1.00	5.00	
	50-64	236	2.72	0.96	1.00	5.00	
	65+	227	2.86	0.94	1.00	5.00	

		N	Mean	SD	Min	Max	p
Education	Less than primary and primary education	193	2.64	0.96	1.00	5.00	<0.01
	Secondary education	475	2.63	0.89	1.00	5.00	
	Graduate and postgraduate education	236	2.85	0.89	1.00	5.00	
Settlement	Urban	400	2.70	0.93	1.00	5.00	0.299
	Rural	504	2.69	0.90	1.00	5.00	
Region	Mun. Chisinau	204	2.81	0.81	1.00	4.75	<0.05
	North	284	2.71	0.80	1.00	4.75	
	Center	246	2.57	0.86	1.00	5.00	
	South	170	2.68	1.21	1.00	5.00	
Chronic disease	Yes	295	2.78	0.87	1.00	5.00	<0.05
	No	609	2.64	0.93	1.00	5.00	

5.3.2 Perception of COVID-19 vaccine safety in general population

Overall, the attitude of the general population towards the safety of the COVID-19 vaccine was moderately negative (Mean=2.69, SD=1.00).

Around one third of participants (31.2%, n=318) considered vaccines against COVID-19 to be generally safe, while one half (48.3%, n=494) disagreed or strongly disagreed. A third (33.1%, n=335) thought that it was safer to be exposed to COVID-19 than to be vaccinated against it, while even 55.7% (n=553) said that they were quite sure that vaccines against COVID-19 contain substances that may be harmful to human health. A total of 62.2% (n=633) of respondents believed that the speed with which COVID-19 vaccines were produced made them question their safety.

Compared to those who were incompletely vaccinated (40%, n=12), completely vaccinated (49.5%, n=190) or received three or more doses (58.5%, n=59), those who were vaccine refusing in smaller proportion (11.5%, n=57) believed that vaccines against COVID-19 are generally safe. The assertion that it is safer to get COVID-19 than to be vaccinated against it was more strongly supported by vaccine refusing (44.3%, n=221) than by those who were incompletely vaccinated (25.9%, n=8), completely vaccinated (23.5%, n=89) or received three or more doses (16.5%, n=17). People who did not take the vaccine (70.6%, n=349) and those who were incompletely vaccinated (54.8%, n=17) in greater proportion believed that vaccines against COVID-19 contain substances that can harm human health, than those who were completely vaccinated (41.6%, n=155) or took three or more doses (33.4%, n=33). Also, vaccine refusing (75.8%, n=382) were more likely to say that the speed with which COVID-19 vaccines are produced makes them question their safety, compared to those who were completely vaccinated (50.3%, n=192) or took three or more doses (40.6%, n=41).

Table 8. Distribution of scores on individual items of attitudes towards COVID-19 vaccine safety according to vaccination behaviour.

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.2.1 In general, I think that vaccines against COVID-19 are safe.	Strongly disagree	164 32.5%	3 10.0%	35 9.1%	6 5.9%	208 20.4%
	Disagree	173 34.3%	10 33.3%	85 22.1%	17 16.8%	285 27.9%
	Neither disagree nor agree	111 22.0%	5 16.7%	74 19.3%	19 18.8%	209 20.5%
	Agree	49 9.7%	8 26.7%	136 35.4%	35 34.7%	228 22.4%
	Strongly agree	8 1.6%	4 13.3%	54 14.1%	24 23.8%	90 8.8%
	Total	505 100.0%	30 100.0%	384 100.0%	101 100.0%	1020 100.0%
C1.2.2 I think that it is safer to get COVID-19 than to get vaccinated against it.	Strongly disagree	53 10.6%	5 16.1%	83 21.9%	33 32.0%	174 17.2%
	Disagree	82 16.4%	10 32.3%	137 36.1%	39 37.9%	268 26.5%
	Neither disagree nor agree	143 28.7%	8 25.8%	70 18.5%	14 13.6%	235 23.2%
	Agree	128 25.7%	6 19.4%	61 16.1%	11 10.7%	206 20.4%
	Strongly agree	93 18.6%	2 6.5%	28 7.4%	6 5.8%	129 12.7%
	Total	499 100.0%	31 100.0%	379 100.0%	103 100.0%	1012 100.0%
C1.2.3 I am quite sure that vaccines against COVID-19 contain substances that can harm human health.	Strongly disagree	21 4.3%	0 0.0%	52 13.9%	16 16.7%	89 9.0%
	Disagree	36 7.3%	6 19.4%	83 22.3%	23 24.0%	148 14.9%
	Neither disagree nor agree	88 17.8%	8 25.8%	83 22.3%	25 26.0%	204 20.5%
	Agree	176 35.6%	9 29.0%	94 25.2%	21 21.9%	300 30.2%
	Strongly agree	173 35.0%	8 25.8%	61 16.4%	11 11.5%	253 25.5%
	Total	494 100.0%	31 100.0%	373 100.0%	96 100.0%	994 100.0%
C1.2.4 The speed with which the COVID-19 vaccines were produced, made me question their safety.	Strongly disagree	17 3.4%	2 6.7%	45 11.8%	17 16.8%	81 8.0%
	Disagree	40 7.9%	6 20.0%	88 23.0%	28 27.7%	162 15.9%
	Neither disagree nor agree	65 12.9%	4 13.3%	57 14.9%	15 14.9%	141 13.9%
	Agree	162 32.1%	9 30.0%	137 35.9%	26 25.7%	334 32.8%
	Strongly agree	220 43.7%	9 30.0%	55 14.4%	15 14.9%	299 29.4%
	Total	504 100.0%	30 100.0%	382 100.0%	101 100.0%	1017 100.0%

As with vaccine efficacy, people who had received three or more doses (Mean=3.38) and were completely vaccinated (Mean=3.11) had significantly more positive attitudes towards COVID-19 vaccine safety than those who were incompletely vaccinated (Mean=2.76) and those who had refused the vaccine (Mean=2.24).

Table 9. Differences in perception of COVID-19 vaccine safety between the respondents exhibiting different vaccine behaviour

Vaccine behaviour	N	Mean	SD	Min	Max	P
Not vaccinated	514	2.24	0.81	1.00	5.00	< 0.001
Incompletely vaccinated	28	2.76	0.87	1.00	5.00	
Completely vaccinated (one or two doses	382	3.11	0.98	1.00	5.00	
Three and more doses	100	3.38	0.92	1.00	5.00	

People with graduate and postgraduate education had more favourable attitudes towards the safety of the COVID-19 vaccine, than people with less than primary/primary and secondary education (Mean=2.88 vs. Mean=2.62, Mean=2.63 respectively; p<0.01). People living in the central parts of the country perceived the vaccine to be less safe compared to those living in Chisinau, North and South (Mean=2.56 vs. Mean=2.82, mean=2.70, Mean=2.73, respectively; p<0.05). No differences in attitudes towards COVID-19 vaccine safety were observed with respect to gender, age, type of settlement and presence/absence of chronic diseases.

Table 10. Differences in perception of COVID-19 vaccine safety between diverse groups of respondents

		N	Mean	SD	Min	Max	p
Gender	Male	412	2.69	1.04	1.00	5.00	0.600
	Female	548	2.70	0.97	1.00	5.00	
Age	18-34	204	2.75	1.00	1.00	5.00	0.201
	35-49	251	2.59	0.94	1.00	5.00	
	50-64	262	2.68	1.05	1.00	5.00	
	65+	243	2.77	1.00	1.00	5.00	
Education	Less than primary and primary education	207	2.62	1.04	1.00	5.00	<0.01
	Secondary education	513	2.63	0.99	1.00	5.00	
	Graduate and postgraduate education	240	2.88	0.96	1.00	5.00	
Settlement	Urban	423	2.72	0.97	1.00	5.00	0.448
	Rural	537	2.68	1.02	1.00	5.00	
Region	Mun. Chisinau	218	2.82	0.86	1.00	4.75	<0.05
	North	300	2.70	0.89	1.00	4.75	
	Center	265	2.56	0.98	1.00	5.00	
	South	177	2.73	1.30	1.00	5.00	
Chronic disease	Yes	319	2.74	0.97	1.00	5.00	0.329
	No	641	2.67	1.01	1.00	5.00	

5.3.3 Perception of danger of COVID-19 disease and likelihood of infection in general population

The danger of COVID-19 disease and the likelihood of infection were considered as moderately low by respondents (Mean=2.77, SD=0.90). More than a half of the respondents thought that the risk of COVID-19 was overstated (56.4%, n=583), while 46.2% (n=478) believed that COVID-19 would not cause more severe symptoms than seasonal flu. In total, 44.3% (n=459) considered themselves to be at low risk of contracting COVID-19.

The belief that danger of COVID-19 disease is overstated was less widespread among those who took one three or more doses (32%, n=33) than among those who were vaccine refusing (69.5%, n=356) or were incompletely vaccinated (53.1%, n=17). The belief that COVID-19 does not cause more severe symptoms than seasonal flu was found in 56% (n=286) of vaccine refusing respondents, 45.4% (n=15) of incompletely vaccinated, 38% (n=147) of those who were completely vaccinated, and among 29.1% (n=30) of those who took three or more doses. While 25.1% (n=8) of incompletely vaccinated respondents considered themselves at low risk of contracting COVID-19, 45.7% (n=234) who were vaccine refusing, 45.9% (n=178) of completely vaccinated and 37.9% (n=39) of those who took three and more doses shared this belief.

Table 11. Distribution of scores on individual items of perceived danger of COVID-19 disease and likelihood of infection according to vaccination behaviour

		Vaccination Behaviour				
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.3.1 I think that the danger of COVID-19 is overstated.	Strongly disagree	15 2.9%	4 12.5%	47 12.1%	19 18.4%	85 8.2%
	Disagree	55 10.7%	3 9.4%	111 28.7%	34 33.0%	203 19.6%
	Neither disagree nor agree	86 16.8%	8 25.0%	52 13.4%	17 16.5%	163 15.8%
	Agree	233 45.5%	13 40.6%	143 37.0%	30 29.1%	419 40.5%
	Strongly agree	123 24.0%	4 12.5%	34 8.8%	3 2.9%	164 15.9%
	Total	512 100.0%	32 100.0%	387 100.0%	103 100.0%	1034 100.0%
C1.3.2 I am sure that COVID-19 does not give more severe symptoms than seasonal flu.	Strongly disagree	33 6.5%	4 12.1%	65 16.8%	20 19.4%	122 11.8%
	Disagree	88 17.2%	6 18.2%	119 30.7%	34 33.0%	247 23.9%
	Neither disagree nor agree	104 20.4%	8 24.2%	56 14.5%	19 18.4%	187 18.1%
	Agree	193 37.8%	11 33.3%	121 31.3%	26 25.2%	351 33.9%
	Strongly agree	93 18.2%	4 12.1%	26 6.7%	4 3.9%	127 12.3%
	Total	511 100.0%	33 100.0%	387 100.0%	103 100.0%	1034 100.0%
C1.3.3 I consider myself as being at low risk of contracting COVID-19.	Strongly disagree	36 7.0%	2 6.3%	32 8.2%	8 7.8%	78 7.5%
	Disagree	79 15.4%	9 28.1%	90 23.2%	26 25.2%	204 19.7%
	Neither disagree nor agree	163 31.8%	13 40.6%	88 22.7%	30 29.1%	294 28.4%
	Agree	158 30.9%	6 18.8%	149 38.4%	34 33.0%	347 33.5%
	Strongly agree	76 14.8%	2 6.3%	29 7.5%	5 4.9%	112 10.8%
	Total	512 100.0%	32 100.0%	388 100.0%	103 100.0%	1035 100.0%

People who were completely vaccinated or took three or more doses perceived COVID-19 as more dangerous and the likelihood of infection as higher than those who were incompletely vaccinated or refused the vaccine (Mean=3.02, Mean=3.24 vs. Mean=2.86, Mean=2.49, respectively; p<0.001).

Table 12. Differences in perceived danger of COVID-19 disease and likelihood of infection between the respondents exhibiting different behaviour

Vaccine behaviour	N	Mean	SD	Min	Max	P
Not vaccinated	514	2.49	0.82	1.00	5.00	< 0.001
Incompletely vaccinated	34	2.86	0.94	1.00	4.33	
Completely vaccinated (one or two doses	410	3.02	0.90	1.00	5.00	
Three and more doses	109	3.24	0.81	1.00	5.00	

Female respondents perceived the danger of COVID-19 disease and the likelihood of infection as significantly higher than males (Mean=2.82 vs. Mean=2.72, respectively; p<0.05). Respondents older than 65 years perceived the danger of COVID-19 disease and the likelihood of infection to be higher compared to people age 18-34, 35-49 and 50-64 (Mean=2.89 vs. Mean=2.71, Mean=2.74, Mean=2.75 respectively; p<0.05).) Also, people with graduate and postgraduate education perceived the danger of COVID-19 disease and the likelihood of infection to be higher than those with primary or secondary education (Mean=3.07 vs. Mean=2.68, Mean=2.66 respectively; p<0.001). People living in urban areas perceived the danger of COVID-19 and the likelihood of infection as higher relative to those living in rural areas (Mean=2.82 vs. Mean=2.74, respectively; p<0.05). People living in Chisinau and northern part of the country perceived the danger of COVID-19 and the likelihood of infection as higher compared to those living in central and southern parts (Mean=2.94, Mean=2.82 vs. Mean=2.67, Mean=2.64, respectively; p<0.001). Respondents with chronic diseases perceived the danger of COVID-19 and the likelihood of infection as higher compared to those who reported no chronic diseases (Mean=2.86 vs. Mean=2.73, respectively; p<0.01).

Table 13. Differences in perceived danger of COVID-19 disease and likelihood of infection between the diverse groups of respondents

		N	Mean	SD	Min	Max	p
Gender	Male	455	2.72	0.94	1.00	5.00	<0.05
	Female	578	2.82	0.87	1.00	5.00	
Age	18-34	215	2.71	0.86	1.00	5.00	<0.05
	35-49	267	2.74	0.90	1.00	5.00	
	50-64	286	2.75	0.94	1.00	5.00	
	65+	265	2.89	0.88	1.00	5.00	
Education	Less than primary and primary education	223	2.68	0.88	1.00	5.00	<0.001
	Secondary education	545	2.66	0.91	1.00	5.00	
	Graduate and postgraduate education	265	3.07	0.84	1.00	5.00	
Settlement	Urban	456	2.82	0.91	1.00	5.00	<0.05
	Rural	577	2.74	0.90	1.00	5.00	
Region	Mun. Chisinau	242	2.94	0.90	1.00	4.75	<0.001
	North	311	2.82	0.77	1.00	4.75	
	Center	294	2.67	0.90	1.00	5.00	
	South	186	2.64	1.07	1.00	5.00	
Chronic disease	Yes	341	2.86	0.87	1.00	5.00	<0.01
	No	692	2.73	0.91	1.00	5.00	

5.3.4 Trust in societal factors related to COVID-19 vaccination in general population

There is a moderately low level of trust in the social factors associated with vaccination against COVID-19 (Mean=2.80, SD=0.89).

In general, 33.1% (n=363) of the respondents stated that they were fully confident in the recommendations of the Health Authorities regarding vaccination against COVID-19. Somewhat larger proportion (41.3%, n=426) believed that the official data on the quality and frequency of adverse reactions to COVID-19 vaccines were true. More than half of respondents believed that pharmaceutical companies cover up the dangers of COVID-19 vaccines (54%, n=557), and that the main motive for scientists involved in the development of COVID-19 vaccines is profit (55.7%, n=577). In total, 44.1% of respondents (n=455) believed that central public authorities promoting COVID-19 vaccination do so with the best of intentions.

Confidence in the Health Authorities' recommendations for vaccination against COVID-19 was expressed by 63.8% (n=65) of those who had received three or more doses, 51.2% (n=198) of those who were completely vaccinated, 45.4% (n=15) of those who were incompletely vaccinated and only 12.7% (n=65) of those who had refused the vaccine. The belief that the official data on the quality and frequency of adverse reactions to COVID-19 vaccines are true was less supported by those who refused the vaccine (28.3%, n=145) than by those who were incompletely vaccinated (53.2%, n=17), those who were completely vaccinated (53.9%, n=209) and those who received three or more doses (53.9%, n=55). The belief that pharmaceutical companies were covering up the dangers of COVID-19 vaccines was supported by 66.8% (n=321) of vaccine refusing, 50% (n=16) of incompletely vaccinated, 45.5% (n=176) of completely vaccinated and 43.1% (n=110) of respondents who took three or more doses. The view that profit was the main motive for scientists involved in the development of COVID-19 vaccines was supported by 64.1% (n=328) of vaccine refusing, 53.2% (n=17) of incompletely vaccinated, 48% (n=186) of completely vaccinated and 44.7% (n=46) of those who took three or more doses. Confidence in best intentions of central public authorities when encouraging COVID-19 vaccination was expressed by 28% (n=148) of vaccine refusing, 50% (n=16) of incompletely vaccinated, 57.2% (n=221) of completely vaccinated and 68.6% (n=70) of those who had taken three or more doses.

Table 14. Distribution of scores on individual items of societal trust related to COVID-19 vaccination according to vaccination behaviour

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C3.1.1 I am fully confident in the recommendations given by Health Authorities regarding the vaccination against COVID-19.	Strongly disagree	178 34.8%	3 9.1%	51 13.2%	5 4.9%	237 22.9%
	Disagree	153 29.9%	6 18.2%	70 18.1%	9 8.8%	238 23.0%
	Neither disagree nor agree	116 22.7%	9 27.3%	68 17.6%	23 22.5%	216 20.9%
	Agree	50 9.8%	11 33.3%	155 40.1%	48 47.1%	264 25.5%
	Strongly agree	15 2.9%	4 12.1%	43 11.1%	17 16.7%	79 7.6%
	Total	512 100.0%	33 100.0%	387 100.0%	102 100.0%	1034 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C3.1.2 I believe that the official data on the quality and frequency of adverse reactions to COVID-19 vaccines are true.	Strongly disagree	132 25.8%	4 12.5%	38 9.8%	8 7.8%	182 17.6%
	Disagree	108 21.1%	6 18.8%	57 14.7%	13 12.7%	184 17.8%
	Neither disagree nor agree	126 24.7%	5 15.6%	84 21.6%	26 25.5%	241 23.3%
	Agree	128 25.0%	15 46.9%	169 43.6%	40 39.2%	352 34.1%
	Strongly agree	17 3.3%	2 6.3%	40 10.3%	15 14.7%	74 7.2%
	Total	511 100.0%	32 100.0%	388 100.0%	102 100.0%	1033 100.0%
C3.1.3 I think that pharmaceutical companies cover up the dangers of COVID-19 vaccines.	Strongly disagree	26 5.1%	4 12.5%	42 10.9%	15 14.7%	87 8.4%
	Disagree	52 10.2%	5 15.6%	91 23.5%	15 14.7%	163 15.8%
	Neither disagree nor agree	112 21.9%	7 21.9%	78 20.2%	28 27.5%	225 21.8%
	Agree	208 40.7%	15 46.9%	139 35.9%	36 35.3%	398 38.6%
	Strongly agree	113 22.1%	1 3.1%	37 9.6%	8 7.8%	159 15.4%
	Total	511 100.0%	32 100.0%	387 100.0%	102 100.0%	1032 100.0%
C3.1.4 I think that the principal motive for the scientists who participated in the creation of the COVID-19 vaccines is profit.	Strongly disagree	25 4.9%	2 6.3%	47 12.1%	15 14.6%	89 8.6%
	Disagree	54 10.5%	5 15.6%	73 18.8%	15 14.6%	147 14.2%
	Neither disagree nor agree	105 20.5%	8 25.0%	82 21.1%	27 26.2%	222 21.4%
	Agree	193 37.7%	14 43.8%	138 35.6%	32 31.1%	377 36.4%
	Strongly agree	135 26.4%	3 9.4%	48 12.4%	14 13.6%	200 19.3%
	Total	512 100.0%	32 100.0%	388 100.0%	103 100.0%	1035 100.0%
C3.1.5 I believe that central public authorities (government, parliament, president), when they encourage COVID-19 vaccination, do so with the best of intentions.	Strongly disagree	93 18.2%	2 6.3%	27 7.0%	7 6.9%	129 12.5%
	Disagree	104 20.4%	5 15.6%	49 12.7%	8 7.8%	166 16.1%
	Neither disagree nor agree	166 32.5%	9 28.1%	89 23.1%	17 16.7%	281 27.3%
	Agree	117 22.9%	13 40.6%	168 43.5%	52 51.0%	350 33.9%
	Strongly agree	31 6.1%	3 9.4%	53 13.7%	18 17.6%	105 10.2%
	Total	511 100.0%	32 100.0%	386 100.0%	102 100.0%	1031 100.0%

The highest level of societal trust was observed among respondents who received three or more doses (Mean=3.30) and those who were completely vaccinated (Mean=3.13), The lowest level of societal trust was observed among vaccine refusing respondents (Mean=2.44).

Table 15. Differences in COVID-19 vaccination related social trust between the respondents exhibiting different vaccine behaviour

Vaccine behaviour	N	Mean	SD	Min	Max	p
Not vaccinated	511	2.44	0.76	1.00	5.00	< 0.001
Incompletely vaccinated	32	3.05	0.88	1.40	5.00	
Completely vaccinated (one or two doses)	387	3.13	0.88	1.00	5.00	
Three and more doses	103	3.30	0.81	1.00	5.00	

Respondents with a graduate and postgraduate education demonstrated significantly higher level of confidence in societal factors related to COVID-19 compared to those with less than primary/primary and secondary education (Mean=3.00 vs. Mean=2.70, Mean=2.74, respectively; p<0.001). People living in rural areas had a higher level of trust in societal factors related to COVID-19 compared to people living in urban areas (Mean=4.01 vs. Mean=3.76, respectively p<0.001). Respondents living in the central part of the country demonstrated somewhat lower level of societal trust compared to those living in Chisinau, North and South (Mean=2.71 vs. Mean=2.87, Mean=2.79, Mean=2.86, respectively; p<0.05). People with chronic disease had a higher level of societal trust than people who reported not having a chronic disease (Mean=2.85 vs. Mean=2.78, respectively; p<0.01).

Table 16. Differences in COVID-19 vaccination related social trust between diverse groups of respondents.

		N	Mean	SD	Min	Max	p
Gender	Male	455	2.82	0.90	1.00	5.00	0.571
	Female	578	2.78	0.89	1.00	5.00	
Age	18-34	215	2.88	0.84	1.00	5.00	0.260
	35-49	267	2.72	0.87	1.00	5.00	
	50-64	286	2.78	0.93	1.00	5.00	
	65+	265	2.83	0.91	1.00	5.00	
Education	Less than primary and primary education	223	2.70	0.91	1.00	5.00	<0.001
	Secondary education	545	2.74	0.90	1.00	5.00	
	Graduate and postgraduate education	265	3.00	0.84	1.00	5.00	
Settlement	Urban	456	2.77	0.91	1.00	5.00	0.621
	Rural	577	2.82	0.88	1.00	5.00	
Region	Mun. Chisinau	242	2.87	0.81	1.00	4.75	<0.05
	North	311	2.79	0.77	1.00	4.75	
	Center	294	2.71	0.79	1.00	5.00	
	South	186	2.86	1.25	1.00	5.00	
Chronic disease	Yes	341	2.85	0.87	1.00	5.00	<0.01
	No	692	2.78	0.91	1.00	5.00	

5.3.5 COVID-19 related trust regarding information sources in general population

Family (37.7%, n=390) and their doctor (35.7%, n=359) were the most trusted source of information about COVID-19 for most members of the general population, followed by health professionals in the media (25%, n=258). Regional TV channels were the least trusted sources with only 5.2% (n=54) of respondents considered regional TV channels as very or completely trustworthy. Among the least trusted sources were also religious leaders (6.1%, n=62), national TV channels (7.5%, n=77), internet portals (8.5%, n=87) and YouTube channels (8.5%, n=88).

While 29.8% (n=31) of respondents who had received three or more doses of the vaccine, 15.2% (n=7) of incompletely vaccinated and 14.7% (n=57) of completely vaccinated found the scientific literature very or completely trustworthy, 9.2% (n=47) of vaccine refusing respondents shared this attitude.

National TV channels were considered as very or completely trustworthy source by 2.8% (n=14) of respondents who had refused vaccination, 10.9% (n=42) of completely vaccinated, 15.2% (n=5) of incompletely vaccinated, and 15.6% (n=16) of those who had received three or more doses. That *regional TV channels* are very, or completely trustworthy source was believed by 2.2% (n=11) of vaccine refusing, 12.1% (n=4) of incompletely vaccinated, 8.5% (n=33) of completely vaccinated and 4.9% (n=5) of those who received three or more doses.

Similarly, 3.9% (n=20) of vaccine refusing, 12.2% (n=4) of incompletely vaccinated, 14.4% (n=56) of completely vaccinated and 6.8% (n=7) of those who received three or more doses felt that *internet portals* were very or completely trustworthy. Furthermore, a small proportion of vaccine refusing (4.1%, n=21), those who received three or more doses (4.9%, n=5), incompletely vaccinated (12.5%, n=4) and completely vaccinated (11.1%, n=43) found *YouTube* channels to be slightly or not at all trustworthy. Similarly, 5.9% (n=30) of vaccine refusing, 15.6% (n=5) of incompletely vaccinated, 11.4% (n=44) of completely vaccinated and 7.8% (n=8) of those who received three or more doses felt that *social networks (Facebook, Viber, Twitter, WhatsApp)* were slightly or not trustworthy sources at all.

Family was most frequently considered a very or completely trustworthy source of information by 51.5% (n=17) of incompletely vaccinated, 40.8% (n=42) of those who received three or more doses, 39.7% (n=154) of completely vaccinated and 34.7%, (n=178) of those who had refused the vaccine. Somewhat smaller number of participants believed that *friends* could be a trustworthy source of vaccine-related information: 22.7% (n=116) of vaccine refusing, 33.3% (n=11) of incompletely vaccinated, 27.7% (n=127) of completely vaccinated and 26% (n=27) of those who received three or more doses.

While 51.9% (n=53) of respondents who had received three or more doses, 45.8% (n=211) of completely vaccinated and 41.9% (n=13) of incompletely vaccinated believed that *their doctor* was a trustworthy source, fewer respondents who were vaccine refusing (22.1%, n=113) shared this view.

Regarding the perception of the credibility of *healthcare professionals in the media*, 42.8% (n=44) of respondents who had received three or more doses, 32.3% (n=125) of completely vaccinated and 30.3% (n=10) of incompletely vaccinated believed that healthcare professionals in media were a trustworthy source, while fewer respondents who were vaccine refusing (15.2%, n=78) shared this view.

Small proportions of vaccines refusing (4.1%, n=21), incompletely vaccinated (12.2%, n=4), completely vaccinated (7.8%, n=30) and those who received three or more doses (7.8%, n=8) reported believing in the credibility of *religious leaders*.

Central public authorities were perceived as a very or completely trustworthy source of information by 26.2% (n=27) of those who received three or more doses, 16.6% (n=64) of completely vaccinated, 12.5% (n=4) of incompletely vaccinated and 7.5% (n=38) of vaccine refusing. Similarly, 21.4% (n=22) of those who received three or more doses, 16.8% (n=65) of completely vaccinated, 12.1% (n=4) of incompletely vaccinated and 7.7% (n=40) of vaccine refusing believed that *local authorities* were a very or completely trustworthy source of information.

International organizations (WHO, UNICEF, CDC) were perceived as a very or completely trustworthy source of information by 33.6% (n=35) of respondents who received three or more doses, 27.9% (n=108) of completely vaccinated, 18.8% (n=6) of incompletely vaccinated and 10.7% (n=55) of vaccine refusing.

Table 17. Distribution of trust in sources of information regarding COVID-19 vaccines according to vaccination behaviour in general population

		Vaccination Behaviour				
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
C3.2.1 Scientific literature	Not at all trustworthy	214 41.9%	6 18.2%	96 24.7%	27 26.0%	343 33.1%
	Slightly trustworthy	103 20.2%	8 24.2%	83 21.4%	15 14.4%	209 20.2%
	Moderately trustworthy	95 18.6%	10 30.3%	111 28.6%	21 20.2%	237 22.9%
	Very trustworthy	30 5.9%	2 6.1%	36 9.3%	18 17.3%	86 8.3%
	Completely trustworthy	17 3.3%	3 9.1%	21 5.4%	13 12.5%	54 5.2%
	Do not know	52 10.2%	4 12.1%	41 10.6%	10 9.6%	107 10.3%
	Total	511 100.0%	33 100.0%	388 100.0%	104 100.0%	1036 100.0%
C3.2.2 National TV channels	Not at all trustworthy	207 40.5%	6 18.2%	97 25.1%	21 20.4%	331 32.0%
	Slightly trustworthy	183 35.8%	12 36.4%	143 37.0%	33 32.0%	371 35.9%
	Moderately trustworthy	79 15.5%	9 27.3%	85 22.0%	27 26.2%	200 19.4%
	Very trustworthy	10 2.0%	3 9.1%	32 8.3%	12 11.7%	57 5.5%
	Completely trustworthy	4 0.8%	2 6.1%	10 2.6%	4 3.9%	20 1.9%
	Do not know	28 5.5%	1 3.0%	19 4.9%	6 5.8%	54 5.2%
	Total	511 100.0%	33 100.0%	386 100.0%	103 100.0%	1033 100.0%
C3.2.3 Regional TV channels	Not at all trustworthy	238 46.5%	7 21.2%	116 30.0%	28 27.5%	389 37.6%
	Slightly trustworthy	162 31.6%	12 36.4%	123 31.8%	32 31.4%	329 31.8%
	Moderately trustworthy	57 11.1%	6 18.2%	82 21.2%	22 21.6%	167 16.2%
	Very trustworthy	10 2.0%	3 9.1%	28 7.2%	4 3.9%	45 4.4%
	Completely trustworthy	1 0.2%	1 3.0%	5 1.3%	1 1.0%	8 0.8%
	Do not know	44 8.6%	4 12.1%	33 8.5%	15 14.7%	96 9.3%
	Total	512 100.0%	33 100.0%	387 100.0%	102 100.0%	1034 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
C3.2.4 Internet portals	Not at all trustworthy	203 39.7%	4 12.1%	95 24.5%	24 23.5%	326 31.6%
	Slightly trustworthy	173 33.9%	13 39.4%	127 32.8%	34 33.3%	347 33.6%
	Moderately trustworthy	71 13.9%	9 27.3%	84 21.7%	29 28.4%	193 18.7%
	Very trustworthy	18 3.5%	2 6.1%	45 11.6%	4 3.9%	69 6.7%
	Completely trustworthy	2 0.4%	2 6.1%	11 2.8%	3 2.9%	18 1.7%
	Do not know	44 8.6%	3 9.1%	25 6.5%	8 7.8%	80 7.7%
	Total	511 100.0%	33 100.0%	387 100.0%	102 100.0%	1033 100.0%
C3.2.5 YouTube channels	Not at all trustworthy	217 42.4%	6 18.8%	105 27.1%	30 29.1%	358 34.6%
	Slightly trustworthy	148 28.9%	12 37.5%	128 33.0%	29 28.2%	317 30.6%
	Moderately trustworthy	75 14.6%	7 21.9%	85 21.9%	28 27.2%	195 18.8%
	Very trustworthy	19 3.7%	3 9.4%	33 8.5%	4 3.9%	59 5.7%
	Completely trustworthy	2 0.4%	1 3.1%	10 2.6%	1 1.0%	14 1.4%
	Do not know	51 10.0%	3 9.4%	27 7.0%	11 10.7%	92 8.9%
	Total	512 100.0%	32 100.0%	388 100.0%	103 100.0%	1035 100.0%
C3.2.6 Social networks (Facebook, Viber, Twitter, WhatsApp):	Not at all trustworthy	205 40.1%	6 18.8%	99 25.6%	33 32.0%	343 33.2%
	Slightly trustworthy	139 27.2%	9 28.1%	126 32.6%	27 26.2%	301 29.2%
	Moderately trustworthy	94 18.4%	9 28.1%	86 22.3%	25 24.3%	214 20.7%
	Very trustworthy	27 5.3%	5 15.6%	34 8.8%	7 6.8%	73 7.1%
	Completely trustworthy	3 0.6%	0 0.0%	10 2.6%	1 1.0%	14 1.4%
	Do not know	43 8.4%	3 9.4%	31 8.0%	10 9.7%	87 8.4%
	Total	511 100.0%	32 100.0%	386 100.0%	103 100.0%	1032 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
C3.2.7 Family	Not at all trustworthy	86 16.8%	2 6.1%	32 8.2%	12 11.7%	132 12.7%
	Slightly trustworthy	77 15.0%	3 9.1%	58 14.9%	13 12.6%	151 14.6%
	Moderately trustworthy	160 31.2%	10 30.3%	128 33.0%	34 33.0%	332 32.0%
	Very trustworthy	108 21.1%	13 39.4%	92 23.7%	25 24.3%	238 23.0%
	Completely trustworthy	70 13.6%	4 12.1%	62 16.0%	17 16.5%	153 14.8%
	Do not know	12 2.3%	1 3.0%	16 4.1%	2 1.9%	31 3.0%
	Total	513 100.0%	33 100.0%	388 100.0%	103 100.0%	1037 100.0%
C3.2.8 Friends	Not at all trustworthy	116 22.7%	2 6.1%	43 11.1%	15 14.4%	176 17.0%
	Slightly trustworthy	117 22.9%	5 15.2%	88 22.8%	17 16.3%	227 22.0%
	Moderately trustworthy	148 29.0%	14 42.4%	129 33.4%	43 41.3%	334 32.3%
	Very trustworthy	92 18.0%	7 21.2%	83 21.5%	19 18.3%	201 19.4%
	Completely trustworthy	24 4.7%	4 12.1%	24 6.2%	8 7.7%	60 5.8%
	Do not know	14 2.7%	1 3.0%	19 4.9%	2 1.9%	36 3.5%
	Total	511 100.0%	33 100.0%	386 100.0%	104 100.0%	1034 100.0%
C3.2.9 Your doctor	Not at all trustworthy	144 28.2%	4 12.9%	34 8.8%	6 5.9%	188 18.3%
	Slightly trustworthy	120 23.5%	3 9.7%	61 15.8%	9 8.8%	193 18.7%
	Moderately trustworthy	121 23.7%	11 35.5%	102 26.4%	32 31.4%	266 25.8%
	Very trustworthy	82 16.0%	5 16.1%	109 28.2%	30 29.4%	226 21.9%
	Completely trustworthy	31 6.1%	8 25.8%	68 17.6%	23 22.5%	130 12.6%
	Do not know	13 2.5%	0 0.0%	12 3.1%	2 2.0%	27 2.6%
	Total	511 100.0%	31 100.0%	386 100.0%	102 100.0%	1030 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
C3.2.10 Healthcare professionals in media	Not at all trustworthy	168 32.9%	4 12.1%	69 17.9%	18 17.5%	259 25.1%
	Slightly trustworthy	141 27.6%	10 30.3%	75 19.4%	14 13.6%	240 23.2%
	Moderately trustworthy	98 19.2%	7 21.2%	100 25.9%	25 24.3%	230 22.3%
	Very trustworthy	62 12.1%	7 21.2%	87 22.5%	29 28.2%	185 17.9%
	Completely trustworthy	16 3.1%	3 9.1%	38 9.8%	15 14.6%	72 7.0%
	Do not know	26 5.1%	2 6.1%	17 4.4%	2 1.9%	47 4.5%
	Total	511 100.0%	33 100.0%	386 100.0%	103 100.0%	1033 100.0%
C3.2.11 Religious leaders	Not at all trustworthy	253 49.4%	7 21.2%	167 43.3%	49 48.0%	476 46.1%
	Slightly trustworthy	122 23.8%	11 33.3%	110 28.5%	21 20.6%	264 25.6%
	Moderately trustworthy	58 11.3%	7 21.2%	39 10.1%	8 7.8%	112 10.8%
	Very trustworthy	16 3.1%	2 6.1%	24 6.2%	4 3.9%	46 4.5%
	Completely trustworthy	5 1.0%	2 6.1%	6 1.6%	4 3.9%	17 1.6%
	Do not know	58 11.3%	4 12.1%	40 10.4%	16 15.7%	118 11.4%
	Total	512 100.0%	33 100.0%	386 100.0%	102 100.0%	1033 100.0%
C3.2.12 Central public authorities	Not at all trustworthy	216 42.2%	7 21.9%	96 24.9%	22 21.4%	341 33.0%
	Slightly trustworthy	125 24.4%	8 25.0%	92 23.8%	23 22.3%	248 24.0%
	Moderately trustworthy	92 18.0%	9 28.1%	108 28.0%	19 18.4%	228 22.1%
	Very trustworthy	30 5.9%	3 9.4%	52 13.5%	19 18.4%	104 10.1%
	Completely trustworthy	8 1.6%	1 3.1%	12 3.1%	8 7.8%	29 2.8%
	Do not know	41 8.0%	4 12.5%	26 6.7%	12 11.7%	83 8.0%
	Total	512 100.0%	32 100.0%	386 100.0%	103 100.0%	1033 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
C3.2.13 Local authorities	Not at all trustworthy	209 40.7%	6 18.2%	89 23.0%	24 23.3%	328 31.7%
	Slightly trustworthy	124 24.2%	9 27.3%	102 26.4%	27 26.2%	262 25.3%
	Moderately trustworthy	101 19.7%	10 30.3%	106 27.4%	18 17.5%	235 22.7%
	Very trustworthy	30 5.8%	4 12.1%	52 13.4%	14 13.6%	100 9.7%
	Completely trustworthy	10 1.9%	0 0.0%	13 3.4%	8 7.8%	31 3.0%
	Do not know	39 7.6%	4 12.1%	25 6.5%	12 11.7%	80 7.7%
	Total	513 100.0%	33 100.0%	387 100.0%	103 100.0%	1036 100.0%
C3.2.14 International organizations (WHO, UNICEF, CDC)	Not at all trustworthy	199 38.9%	5 15.6%	78 20.2%	17 16.3%	299 28.9%
	Slightly trustworthy	114 22.3%	5 15.6%	73 18.9%	22 21.2%	214 20.7%
	Moderately trustworthy	104 20.4%	12 37.5%	102 26.4%	23 22.1%	241 23.3%
	Very trustworthy	35 6.8%	6 18.8%	74 19.1%	20 19.2%	135 13.1%
	Completely trustworthy	20 3.9%	0 0.0%	34 8.8%	15 14.4%	69 6.7%
	Do not know	39 7.6%	4 12.5%	26 6.7%	7 6.7%	76 7.4%
	Total	511 100.0%	32 100.0%	387 100.0%	104 100.0%	1034 100.0%

5.3.6 Beliefs related to perceived collective responsibility regarding COVID-19 vaccination

More than a half of respondents (55.2%, n=570) reported they were concerned that if they had COVID-19, they could pass it on to others who could get a very severe form of the disease. A third of them (34%, n=352), reported that it was important for all people to be vaccinated against COVID-19 in order to achieve collective/herd immunity. Of the total number of respondents who were vaccine refusing, 53.4% (n= 273) agreed or strongly agreed that they did not think it was important for them to be vaccinated against COVID-19 because enough people were being vaccinated.

The fear that if they had COVID-19 they could transmit it to others who might have a very severe form of the disease was more common among those who were completely vaccinated (68.2%, n=264) and those who took three or more doses (75.7%, n=78), while smaller proportion of those who were vaccine refusing (40.9%, n=209) and those who were incompletely vaccinated (59.4%, n=19) shared this concern. The belief that it is important for all people to be vaccinated against COVID-19 in order to achieve collective/herd immunity was less common among vaccine refusing (12.9%, n=66) than among those who were incompletely vaccinated (54.5%, n=18), who were completely vaccinated (52.9%, n=205) or those who took three or more doses (60.6%, n=63).

Table 18. Distribution of scores on individual items of perceived collective responsibility related to COVID-19 vaccination according to vaccination behaviour

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.5.1 I am scared that if I get sick with COVID-19, I could transmit it to others who could get very sick (have a very severe form of the disease).	Strongly disagree	81 15.9%	2 6.3%	26 6.7%	4 3.9%	113 10.9%
	Disagree	102 20.0%	6 18.8%	43 11.1%	4 3.9%	155 15.0%
	Neither disagree nor agree	119 23.3%	5 15.6%	54 14.0%	17 16.5%	195 18.9%
	Agree	167 32.7%	15 46.9%	201 51.9%	54 52.4%	437 42.3%
	Strongly agree	42 8.2%	4 12.5%	63 16.3%	24 23.3%	133 12.9%
	Total	511 100.0%	32 100.0%	387 100.0%	103 100.0%	1033 100.0%
C1.5.2 It is important that we all get vaccinated against COVID-19 in order to achieve collective immunity.	Strongly disagree	143 27.9%	4 12.1%	43 11.1%	5 4.8%	195 18.8%
	Disagree	168 32.8%	4 12.1%	58 15.0%	14 13.5%	244 23.6%
	Neither disagree nor agree	135 26.4%	7 21.2%	81 20.9%	22 21.2%	245 23.6%
	Agree	53 10.4%	14 42.4%	146 37.7%	45 43.3%	258 24.9%
	Strongly agree	13 2.5%	4 12.1%	59 15.2%	18 17.3%	94 9.1%
	Total	512 100.0%	33 100.0%	387 100.0%	104 100.0%	1036 100.0%
C1.5.3 Since a sufficient number of people will be vaccinated against COVID-19, I do not think it is necessary for me to get the vaccine*.	Strongly disagree	38 7.4%	N/A	N/A	N/A	38 7.4%
	Disagree	74 14.5%	N/A	N/A	N/A	74 14.5%
	Neither disagree nor agree	126 24.7%	N/A	N/A	N/A	126 24.7%
	Agree	186 36.4%	N/A	N/A	N/A	186 36.4%
	Strongly agree	87 17.0%	N/A	N/A	N/A	87 17.0%
	Total	511 100.0%	N/A	N/A	N/A	511 100.0%

* *Only respondents who had not been vaccinated were asked question C1.5.3*

5.3.7 Beliefs regarding direct and indirect personal experience related to COVID-19 vaccines in general population

Of those vaccinated, 20% (n=104) reported having experienced a serious adverse reaction after receiving the COVID-19 vaccine. Overall, 41.9% (n=432) of all respondents reported that they personally knew someone who experienced a serious adverse reaction after receiving the COVID-19 vaccine. Experience of a serious adverse reaction was reported by 31.3% of those who were incompletely vaccinated, 20.4% of completely vaccinated and 14.7% of those who took three or more doses. Personal knowledge of someone who experienced serious adverse reaction after vaccination was reported by 46.4% (n=237) of vaccine refusing, 40.6% (n=13) of incompletely vaccinated, 38.2% (n=148) of completely vaccinated and 33.3% (n=34) of those who took three or more doses.

Table 19. Distribution of direct and indirect personal experience related to COVID-19 vaccination according to vaccination behaviour

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three or more doses	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.4.1 I experienced a serious adverse reaction* after receiving the COVID-19 vaccine.	Yes	/	10 31.3%	79 20.4%	15 14.7%	104 20.0%
	No	/	22 68.8%	307 79.3%	87 85.3%	416 79.8%
	Do not know	/	0 0.0%	1 0.3%	0 0.0%	1 0.2%
	Total	/	32 100.0%	387 100.0%	102 100.0%	521 100.0%
C1.4.2 I personally know someone who experienced a serious adverse reaction after receiving the COVID-19 vaccine	Yes	237 46.4%	13 40.6%	148 38.2%	34 33.3%	432 41.9%
	No	254 49.7%	16 50.0%	229 59.2%	66 64.7%	565 54.7%
	Do not know	20 3.9%	3 9.4%	10 2.6%	2 2.0%	35 3.4%
	Total	511 100.0%	32 100.0%	387 100.0%	102 100.0%	1032 100.0%

* *A serious adverse reaction is defined as a reaction that requires hospital treatment or hospitalization, is life threatening, and can result in disability or even death.*

5.3.8 Conspiracy beliefs related to COVID-19 vaccines in general population

Respondents showed moderately high level of conspiracy beliefs related to vaccination against COVID-19 (Mean=3.20, SD=0.98).

In general, 34.2% (n=364) of respondents agreed or strongly agreed that COVID-19 is a hoax, while 36.5% (n=381) disagreed or strongly disagreed. In total, 69.6% (n=719) believed that the coronavirus was man-made, while 17.1% (n=177) were unsure about this. Although more than half of the respondents (62.0%, n=640) supported the opinion that the spread of the coronavirus was a deliberate attempt to reduce the global population, a slightly smaller percentage (52.4%, n=542) thought it was a deliberate attempt by governments to gain political control. In addition, 59.0% (n=610) of respondents believed that "Big Pharma" created COVID-19 to profit from the vaccines, and 24.3% (n=252) believed that COVID-19 was caused by 5G and that it was a form of radiation poisoning transmitted by radio waves. The idea that the COVID-19 vaccine will be used for mass sterilization was supported by 32.8% (n=339) of respondents, while 27.1% (n=207) were ambivalent.

While half of those who had refused the vaccine believed that COVID-19 was a hoax (49.9%, n=255), around a third of incompletely vaccinated (36.4%, n=12), a fifth of completely vaccinated (21%, n=81) and 15.5% (n=16) of those who took three or more doses shared this belief. The claim that the

coronavirus is man-made was supported by 76.9% (n=392) of vaccine refusing people, 68.8% (n=22) of incompletely vaccinated, 63.1% (n=245) of completely vaccinated and 57.9% (n=59) of those who took three or more doses. While 74.1% (n=379) of people who did not take the vaccine believed that the spread of coronavirus is a deliberate attempt to reduce the global population, 46.9% (n=15) of incompletely vaccinated, 52.9% (n=204) of completely vaccinated and 41.2% (n=42) of those who received three or more doses shared this belief. More than half of respondents who did not take the vaccine (64.3%, n=329) believed that the spread of coronavirus was a deliberate attempt by governments to gain political control, while 39.4% (n=13) of incompletely vaccinated, 43.2% (n=167) of completely vaccinated and 32.1% (n=33) of those who received three or more doses believed so.

More than two thirds of those who were vaccine refusing (70.3%, n=360) believed that "Big Pharma" created COVID-19 to profit from vaccines, while 46.9% (n=15) of incompletely vaccinated, 48.0% (n=86) of completely vaccinated and 47.6% (n=49) of those who took three or more doses shared this belief. The belief that COVID-19 is caused by 5G and that it is a form of radiation poisoning transmitted by radio waves was prevalent among 22.4% (n=166) of those who refused the vaccine, 25.1% (n=8) of incompletely vaccinated, 16.8% (n=65) of completely vaccinated, and 12.7% (n=13) of those who received three or more doses. Similarly, the opinion that the COVID-19 vaccine will be used for mass sterilization was supported by 44.8% (n=229) of vaccine refusing, 28.1% (n=9) of incompletely vaccinated, 22.0% (n=85) of completely vaccinated and 15.7% (n=16) of those who received three or more doses.

Table 20. Distribution of scores on individual items of conspiracy beliefs related to COVID-19 vaccination according to vaccination behaviour

		Vaccination Behaviour				
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.6.1 I think that COVID-19 is a hoax.	Strongly disagree	51 10.0%	8 24.2%	99 25.6%	34 33.0%	192 18.6%
	Disagree	98 19.1%	11 33.3%	145 37.6%	35 34.0%	289 27.9%
	Neither disagree nor agree	108 21.1%	2 6.1%	61 15.8%	18 17.5%	189 18.3%
	Agree	159 31.1%	7 21.2%	59 15.3%	14 13.6%	239 23.1%
	Strongly agree	96 18.8%	5 15.2%	22 5.7%	2 1.9%	125 12.1%
	Total	512 100.0%	33 100.0%	386 100.0%	103 100.0%	1034 100.0%
C1.6.2 I believe that coronavirus is manmade.	Strongly disagree	13 2.5%	3 9.4%	43 11.1%	7 6.9%	66 6.4%
	Disagree	25 4.9%	1 3.1%	35 9.0%	10 9.8%	71 6.9%
	Neither disagree nor agree	80 15.7%	6 18.8%	65 16.8%	26 25.5%	177 17.1%
	Agree	229 44.8%	19 59.4%	182 46.9%	37 36.3%	467 45.2%
	Strongly agree	164 32.1%	3 9.4%	63 16.2%	22 21.6%	252 24.4%
	Total	511 100.0%	32 100.0%	388 100.0%	102 100.0%	1033 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.6.3 In my opinion the spread of the corona virus is a deliberate attempt to reduce the size of the global population.	Strongly disagree	18 3.5%	7 21.9%	55 14.2%	18 17.6%	98 9.5%
	Disagree	44 8.6%	3 9.4%	59 15.3%	14 13.7%	120 11.6%
	Neither disagree nor agree	71 13.9%	7 21.9%	68 17.6%	28 27.5%	174 16.9%
	Agree	224 43.8%	14 43.8%	155 40.2%	31 30.4%	424 41.1%
	Strongly agree	155 30.3%	1 3.1%	49 12.7%	11 10.8%	216 20.9%
	Total	512 100.0%	32 100.0%	386 100.0%	102 100.0%	1032 100.0%
C1.6.4 As I see it, the spread of the corona virus is a deliberate attempt by governments to gain political control.	Strongly disagree	23 4.5%	6 18.2%	62 16.0%	19 18.4%	110 10.6%
	Disagree	56 10.9%	8 24.2%	79 20.4%	27 26.2%	170 16.4%
	Neither disagree nor agree	104 20.3%	6 18.2%	79 20.4%	24 23.3%	213 20.6%
	Agree	201 39.3%	9 27.3%	135 34.9%	21 20.4%	366 35.4%
	Strongly agree	128 25.0%	4 12.1%	32 8.3%	12 11.7%	176 17.0%
	Total	512 100.0%	33 100.0%	387 100.0%	103 100.0%	1035 100.0%
C1.6.5 I consider that Big Pharma created COVID-19 to profit from the vaccines.	Strongly disagree	17 3.3%	4 12.5%	51 13.2%	14 13.6%	86 8.3%
	Disagree	51 10.0%	3 9.4%	74 19.2%	22 21.4%	150 14.5%
	Neither disagree nor agree	84 16.4%	10 31.3%	75 19.4%	18 17.5%	187 18.1%
	Agree	209 40.8%	13 40.6%	140 36.3%	35 34.0%	397 38.4%
	Strongly agree	151 29.5%	2 6.3%	46 11.9%	14 13.6%	213 20.6%
	Total	512 100.0%	32 100.0%	386 100.0%	103 100.0%	1033 100.0%
C1.6.6 I believe that COVID-19 is caused by 5G and that it is a form of radiation poisoning transmitted through radio waves.	Strongly disagree	73 14.3%	9 28.1%	115 29.7%	33 32.0%	230 22.2%
	Disagree	117 22.9%	7 21.9%	110 28.4%	31 30.1%	265 25.6%
	Neither disagree nor agree	156 30.5%	8 25.0%	97 25.1%	26 25.2%	287 27.8%
	Agree	86 16.8%	6 18.8%	45 11.6%	8 7.8%	145 14.0%
	Strongly agree	80 15.6%	2 6.3%	20 5.2%	5 4.9%	107 10.3%
	Total	512 100.0%	32 100.0%	387 100.0%	103 100.0%	1034 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three doses and more	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C1.6.7 I think that the COVID-19 vaccine will be used to carry out mass sterilization	Strongly disagree	53 10.4%	9 28.1%	112 29.0%	32 31.4%	206 20.0%
	Disagree	79 15.5%	7 21.9%	94 24.4%	27 26.5%	207 20.1%
	Neither disagree nor agree	150 29.4%	7 21.9%	95 24.6%	27 26.5%	279 27.1%
	Agree	143 28.0%	8 25.0%	61 15.8%	9 8.8%	221 21.4%
	Strongly agree	86 16.8%	1 3.1%	24 6.2%	7 6.9%	118 11.4%
	Total	511 100.0%	32 100.0%	386 100.0%	102 100.0%	1031 100.0%

Conspiracy beliefs endorsement was the most noticeable in people who were vaccine refusing (Mean=3.56). A significantly weaker tendency towards this type of beliefs was found in those who were incompletely (Mean=2.91) and completely vaccinated (Mean=2.86), while it was least pronounced among those who had received three or more doses (Mean=2.74).

Table 21. Differences in COVID-19 related conspiracy beliefs between the respondents exhibiting different vaccine behaviour in general population

Vaccine behaviour	N	Mean	SD	Min	Max	p
Not vaccinated	511	3.56	0.86	1.00	5.00	< 0.001
Incompletely vaccinated	32	2.91	0.90	1.43	4.00	
Completely vaccinated (one or two doses)	387	2.86	0.96	1.00	5.00	
Three and more doses	103	2.74	0.94	1.00	4.86	

Respondents aged 18-34 (Mean=2.98) were less likely ($p<0.01$) to hold conspiracy beliefs than those aged 35-49 (Mean=3.20), 50-64 (Mean=3.27) and 65 and over (Mean=3.28). Conspiracy beliefs were also more widespread ($p<0.001$) among people with less than primary/primary (Mean=3.40) and secondary education (Mean=3.27) relative to those with a university degree (Mean=2.87). Respondents living in urban areas were less likely to hold conspiracy beliefs than those living in rural areas (Mean=3.10 vs. Mean=3.27; respectively $p<0.01$). Respondents living in Chisinau (Mean=2.92) were less likely to hold conspiracy beliefs ($p<0.001$) than those living in northern (Mean=3.24), central (Mean=3.33) and southern Moldova (3.27). There were no differences in the tendency to believe in conspiracy theories with respect to gender and presence/absence of chronic diseases.

Table 22. Differences in COVID-19 related conspiracy beliefs between diverse groups of respondents from general population

		N	Mean	SD	Min	Max	p
Gender	Male	455	3.18	1.02	1.00	5.00	0.756
	Female	578	3.21	0.94	1.00	5.00	
Age	18-34	215	2.98	1.01	1.00	5.00	<0.01
	35-49	267	3.20	0.93	1.00	5.00	
	50-64	286	3.27	0.99	1.00	5.00	
	65+	265	3.28	0.96	1.00	5.00	

		N	Mean	SD	Min	Max	p
Education	Less than primary and primary education	223	3.40	0.99	1.00	5.00	<0.001
	Secondary education	545	3.27	0.99	1.00	5.00	
	Graduate and postgraduate education	265	2.87	0.86	1.00	5.00	
Settlement	Urban	456	3.10	0.97	1.00	5.00	<0.01
	Rural	577	3.27	0.97	1.00	5.00	
Region	Mun. Chisinau	242	2.92	0.90	1.00	4.75	<0.001
	North	311	3.24	0.84	1.00	4.75	
	Center	294	3.33	0.90	1.00	5.00	
	South	186	3.27	1.29	1.00	5.00	
Chronic disease	Yes	341	3.24	0.93	1.00	5.00	0.310
	No	692	3.17	1.00	1.00	5.00	

5.3.9 Thinking styles

In general, there were no statistically significant differences in the preference for rational thinking between respondents with different vaccination behaviour. However, those who took three or more doses were less inclined towards intuitive thinking (Mean=17.20) than vaccine refusing (Mean=18.27), incompletely vaccinated (Mean=19.14) and completely vaccinated (Mean=18.19) ($p<0.05$).

Table 23. Differences in preferences for rational thinking in respondents exhibiting diverse vaccination behaviour

Analytically rational thinking	N	Mean	SD	Min	Max	p
Not vaccinated	511	16.00	3.62	5.00	25.00	0.257
Incompletely vaccinated	32	15.56	3.39	10.00	24.00	
Completely vaccinated (one or two doses)	387	16.22	3.30	5.00	25.00	
Three and more doses	103	16.53	3.66	9.00	25.00	

Table 24. Differences in preferences for intuitive thinking in respondents exhibiting diverse vaccination behaviour

Experientially-intuitive thinking	N	Mean	SD	Min	Max	p
Not vaccinated	511	18.27	3.90	5.00	25.00	<0.05
Incompletely vaccinated	32	19.14	3.79	9.00	25.00	
Completely vaccinated (one or two doses	387	18.19	3.80	5.00	25.00	
Three and more doses	103	17.20	3.87	9.00	25.00	

There were statistically significant correlations between preferences for specific thinking style and psychological vaccine behaviour drivers. Respondents with stronger preferences for the rational thinking style were more trusting of information from internet portals ($\beta=0.27$, $p<0.001$) and friends ($\beta=0.23$, $p<0.01$) and were less trusting in family ($\beta=-0.28$, $p<0.001$) and religious leaders ($\beta=-0.18$, $p<0.01$) as sources of vaccine-related information.

Table 25. Correlation of preferences for rational thinking and other psychological factors in general population (multiple analysis)

Psychological factors	B	SE	Beta	95% CI		p
(Constant)	16.849	2.080		12.760	20.939	<0.001
Perceived vaccine safety	-0.429	0.280	-0.098	-0.980	0.122	0.126

Psychological factors	B	SE	Beta	95% CI		p
Perceived danger of disease and likelihood of infection	0.283	0.252	0.065	-0.212	0.778	0.261
Trust in societal factor	0.265	0.338	0.057	-0.399	0.930	0.433
Conspiracy beliefs	-0.182	0.304	-0.043	-0.779	0.416	0.550
C1.5.1 Collective responsibility: I am scared that if I get sick with COVID-19, I could transmit it to others who could get very sick (have a very severe form of the disease).	0.205	0.158	0.072	-0.106	0.517	0.195
C1.5.3 Collective responsibility: Since a sufficient number of people will be vaccinated against COVID-19, I do not think it is necessary for me to get the vaccine.	-0.231	0.160	-0.076	-0.547	0.084	0.150
Scientific literature (trust in information sources)	-0.079	0.186	-0.025	-0.444	0.287	0.673
Regional TV channels (trust in information sources)	-0.493	0.311	-0.110	-1.104	0.119	0.114
Internet portals (trust in information sources)	1.122	0.301	0.275	0.531	1.714	<0.001
Family (trust in information sources)	-0.740	0.170	-0.277	-1.075	-0.405	<0.001
Friends (trust in information sources)	0.681	0.216	0.232	0.255	1.106	<0.01
Healthcare professionals in media (trust in information sources)	0.077	0.208	0.025	-0.332	0.485	0.712
Religious leaders (trust in information sources)	-0.700	0.238	-0.178	-1.169	-0.231	<0.01

Respondents with a stronger preference for the intuitive thinking style were more likely to believe in conspiracies (β=0.22, p<0.001), more likely to trust information provided by family (β=0.29, p<0.01) and central public authorities (β=0.22, p<0.01), and less likely to trust scientific literature (β=-0.15, p<0.01) and friends (β=-0.17, p<0.05).

Table 26. Correlation of preferences for intuitive thinking and other psychological factors in parents/caregivers (multiple analysis)

Psychological factors	B	SE	Beta	95% CI		p
(Constant)	14.563	1.892		10.843	18.283	<0.001
Perceived vaccine safety	-0.439	0.269	-0.089	-0.969	0.091	0.104
Perceived danger of disease and likelihood of infection	-0.198	0.259	-0.041	-0.707	0.311	0.445
Conspiracy beliefs	1.079	0.290	0.225	0.508	1.649	<0.001
C1.5.1 Collective responsibility: I am scared that if I get sick with COVID-19, I could transmit it to others who could get very sick (have a very severe form of the disease).	-0.153	0.163	-0.048	-0.473	0.167	0.349
C1.5.3 Collective responsibility: Since a sufficient number of people will be vaccinated against COVID-19, I do not think it is necessary for me to get the vaccine.	0.188	0.166	0.055	-0.138	0.515	0.257
Scientific literature (trust in information sources)	-0.542	0.186	-0.155	-0.907	-0.177	<0.01
Social networks (trust in information sources)	-0.375	0.234	-0.091	-0.834	0.085	0.110
Family (trust in information sources)	0.874	0.177	0.293	0.526	1.223	<0.001
Friends (trust in information sources)	-0.559	0.225	-0.170	-1.001	-0.116	<0.05
Healthcare professionals in media (trust in information sources)	-0.101	0.240	-0.030	-0.572	0.370	0.672
Religious leaders (trust in information sources)	0.176	0.256	0.040	-0.328	0.679	0.493
Central public authorities (trust in information sources)	0.875	0.275	0.226	0.334	1.416	<0.01

Preferences for rational thinking were significantly more pronounced among respondents aged 18-34 (Mean=16.81) and aged 35-49 (Mean=16.17), than among those aged 50-64 (Mean=15.74) and 65 and over (Mean=15.94). Also, preferences for rational thinking were significantly more pronounced among respondents with graduate and postgraduate education than among those with less than primary/primary and secondary education (Mean=17.39 vs. Mean=14.68; Mean=16.10; respectively; p<0.001). Respondents living in urban parts were more inclined towards rational thinking than those living in rural areas (Mean=16.44 vs. Mean=15.87, respectively; p<0.01). No difference in preference for rational thinking style were found in relation to gender and presence/absence of chronic diseases.

Table 27. Differences in preferences for rational thinking between diverse groups of parents/ caregivers

		N	Mean	SD	Min	Max	p
Gender	Male	455	16.27	3.62	5.00	25.00	0.576
	Female	578	16.01	3.41	5.00	25.00	
Age	18-34	215	16.81	3.30	7.00	25.00	<0.01
	35-49	267	16.17	3.82	5.00	25.00	
	50-64	286	15.74	3.40	7.00	25.00	
	65+	265	15.94	3.36	7.00	25.00	
Education	Less than primary and primary education	223	14.68	3.38	5.00	25.00	<0.001
	Secondary education	545	16.10	3.41	8.00	25.00	
	Graduate and postgraduate education	265	17.39	3.32	7.00	25.00	
Settlement	Urban	456	16.44	3.36	5.00	25.00	<0.01
	Rural	577	15.87	3.59	5.00	25.00	
Chronic disease	Yes	341	16.25	3.56	7.00	25.00	0.647
	No	692	16.06	3.47	5.00	25.00	

Preferences for intuitive thinking were significantly higher among respondents aged 50-64 and those 65 and older than in respondents aged 18-34 and 35-49 years (Mean=18.64, mean=18.28 vs. Mean=17.92, Mean=17.70; respectively p<0.05). Respondents with graduate and postgraduate education were less inclined to intuitive thinking than respondents with less than primary/primary and secondary education (Mean=17.35 vs. Mean=18.67, Mean=18.34; respectively p<0.01). Also, respondents living in rural areas expressed greater preferences for intuitive thinking than those living in urban areas (Mean=18.58 vs. Mean=17.62; respectively p<0.01).

Table 28. Differences in preferences for intuitive thinking between diverse groups of parents/ caregivers

		N	Mean	SD	Min	Max	p
Gender	Male	455	18.13	3.96	5.00	25.00	0.904
	Female	578	18.18	3.72	5.00	25.00	
Age	18-34	215	17.92	3.90	5.00	25.00	<0.05
	35-49	267	17.70	3.71	5.00	25.00	
	50-64	286	18.64	3.82	5.00	25.00	
	65+	265	18.28	3.84	5.00	25.00	
Education	Less than primary and primary education	223	18.67	3.66	10.00	25.00	<0.01
	Secondary education	545	18.34	3.90	5.00	25.00	
	Graduate and postgraduate education	265	17.35	3.72	5.00	25.00	
Settlement	Urban	456	17.62	4.07	5.00	25.00	<0.001
	Rural	577	18.58	3.57	5.00	25.00	
Chronic disease	Yes	341	18.24	3.68	5.00	25.00	0.473
	No	692	18.12	3.90	5.00	25.00	

5.4 Sociological factors

5.4.1 Descriptive norms regarding COVID-19 vaccination in general population (impact on general attitudes towards vaccination)

One third of respondents assessed their own attitudes towards vaccination against COVID-19 as positive or somewhat positive (33.4%, n=344), while 43.2% (n=440) had very negative or somewhat negative attitudes. A similar proportion of respondents believed that their family (33.3%, n=344) supported COVID-19 vaccination.

Most respondents believed that healthcare providers (80.4%, n=831), National Health Authorities (79.6%, n=822), central public authorities (government, parliament and president) (77.2%, n=798) and local public authorities (60.1%, n=620) had a positive attitude towards COVID-19 vaccination. The lowest proportions believed that their friends (24.7%, n=255), community people (21.7%, n=225) and religious leaders (14.8%, n=153) had positive attitudes towards COVID-19 vaccination. Even 36.4% (n=376) did not know the attitude of their religious leaders towards COVID-19 vaccination.

Table 29. Distribution of perception of descriptive norms related to COVID-19 vaccination – general attitudes towards COVID-19 vaccination

	Attitudes					
	Very negative	Somewhat negative	Neutral	Somewhat positive	Very positive	Do not know
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
C2.2.1 Own attitudes	229 22.2%	217 21.0%	244 23.6%	234 22.6%	110 10.6%	/
C2.2.2 Family's attitudes	203 19.6%	231 22.3%	255 24.7%	250 24.2%	94 9.1%	/
C2.2.3 Friends' attitudes	153 14.9%	231 22.4%	393 38.1%	196 19.0%	59 5.7%	/
C2.2.4 Local public authorities' attitudes	21 2.1%	41 4.0%	146 14.1%	386 37.4%	234 22.7%	204 19.8%
C2.2.5 National Health Authorities' (Ministry of Health, National Agency for Public Health) attitudes	11 1.1%	18 1.7%	70 6.8%	364 35.2%	458 44.4%	112 10.8%
C2.2.6 People's from community/ neighbourhood attitudes	54 5.3%	185 17.9%	438 42.2%	158 15.3%	67 6.4%	131 12.7%
C2.2.7 Religious leaders' attitudes	121 11.7%	157 15.2%	226 21.9%	104 10.1%	49 4.7%	376 36.4%
C2.2.8 Healthcare providers' (hospital, center of family doctors) attitudes	13 1.3%	22 2.1%	76 7.4%	372 36.0%	459 44.4%	91 8.8%
C2.2.9 Central public authorities' (government, parliament, president) attitudes	11 1.1%	16 1.5%	73 7.1%	357 34.5%	441 42.7%	136 13.1%

While only 11% (n=56) of vaccine refusing respondents had positive attitudes towards COVID-19 vaccination, 33.7% (n=15) of incompletely vaccinated, 51% (n=197) of completely vaccinated and 72.9% (n=75) of those who received three or more doses agreed so. That their family members supported COVID-19 vaccination was believed by 13.4% (n=69) of vaccine refusing, 43.7% (n=14) of incompletely vaccinated, 49.1% (n=190) of completely vaccinated and 69% (n=71) of those who received three or more doses. Similarly, 11.4% (n=58) of vaccine refusing and 37.5% (n=16) of incompletely vaccinated believed that their friends support vaccination, while smaller proportions of completely vaccinated (37.7%, n=146) and those who received three or more doses (37.9%, n=39) believed that their friends had positive attitudes.

While 41.5% (n=113) of vaccine refusing believed that local public authorities had positive attitudes towards COVID-19 vaccination, even 21.8% (n=112) of them were nor familiar with their attitude.

Even 64.6% (n=250) of completely vaccinated and 72.8% (n=75) of those who received three or more doses thought that local public authorities were supportive of vaccination. Similar proportions of vaccine refusing (75.5%, n=385), incompletely vaccinated (78%, n=25), completely vaccinated (83.8%, n=325) and those who had received three or more doses (85.5%, n=88) believed that National Health Authorities supported COVID-19 vaccination.

Similar proportions of vaccine refusing (19.1%, n=98), incompletely vaccinated (12.6%, n=4), completely vaccinated (19.6%, n=77) and those who had received three or more doses (18.6%, n=19) believed that people from the community/neighbourhood had positive attitudes towards COVID-19 vaccination. Similar proportions of vaccine refusing (38.1%, n=195), incompletely vaccinated (37.5%, n=12), completely vaccinated (35%, n=135) and those who had received three or more doses (33%, n=34) were not familiar with their religious leaders' attitudes towards COVID-19 vaccination.

That healthcare provider supported COVID-19 vaccination was believed by 52.6% (n=269) of vaccine refusing, 46.9% (n=15) of incompletely vaccinated, 52.3% (n=203) of completely vaccinated and 62.2% (n=64) of those who received three or more doses. That central public authorities (government, parliament, president) supported COVID-19 vaccinated was believed by 56.7% (n=290) of vaccine refusing, 43.7% (n=14) of incompletely vaccinated, 54.3% (n=210) of completely vaccinated and 60.2% (n=62) of those who received three or more doses.

Table 30. Distribution of respondents from general population scores on descriptive norms related to COVID-19 vaccination (general attitudes towards COVID-19 vaccination) according to vaccination behaviour

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three or more doses	Total
Descriptive norms		N %	N %	N %	N %	N %
Own attitudes	Very negative	181 35.4%	6 18.8%	37 9.6%	5 4.9%	229 22.2%
	Somewhat negative	152 29.7%	6 18.8%	50 13.0%	9 8.7%	217 21.0%
	Neutral	123 24.0%	5 15.6%	102 26.4%	14 13.6%	244 23.6%
	Somewhat positive	48 9.4%	9 28.1%	131 33.9%	46 44.7%	234 22.7%
	Very positive	8 1.6%	6 18.8%	66 17.1%	29 28.2%	109 10.6%
	Total	512 100.0%	32 100.0%	386 100.0%	103 100.0%	1033 100.0%
Family's attitudes	Very negative	150 29.3%	5 15.6%	42 10.9%	6 5.8%	203 19.6%
	Somewhat negative	155 30.3%	9 28.1%	59 15.2%	9 8.7%	232 22.4%
	Neutral	138 27.0%	4 12.5%	96 24.8%	17 16.5%	255 24.7%
	Somewhat positive	57 11.1%	9 28.1%	136 35.1%	49 47.6%	251 24.3%
	Very positive	12 2.3%	5 15.6%	54 14.0%	22 21.4%	93 9.0%
	Total	512 100.0%	32 100.0%	387 100.0%	103 100.0%	1034 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three or more doses	Total
Descriptive norms		N %	N %	N %	N %	N %
Friends' attitudes	Very negative	111 21.7%	2 6.3%	36 9.3%	5 4.9%	154 14.9%
	Somewhat negative	153 29.9%	11 34.4%	54 14.0%	13 12.6%	231 22.4%
	Neutral	189 37.0%	7 21.9%	151 39.0%	46 44.7%	393 38.0%
	Somewhat positive	50 9.8%	9 28.1%	108 27.9%	29 28.2%	196 19.0%
	Very positive	8 1.6%	3 9.4%	38 9.8%	10 9.7%	59 5.7%
	Total	511 100.0%	32 100.0%	387 100.0%	103 100.0%	1033 100.0%
Local public authorities' attitudes	Very negative	18 3.5%	0 0.0%	4 1.0%	0 0.0%	22 2.1%
	Somewhat negative	31 6.0%	0 0.0%	10 2.6%	1 1.0%	42 4.1%
	Neutral	75 14.6%	5 16.1%	53 13.7%	13 12.6%	146 14.1%
	Somewhat positive	176 34.3%	12 38.7%	155 40.1%	43 41.7%	386 37.3%
	Very positive	101 19.7%	6 19.4%	95 24.5%	32 31.1%	234 22.6%
	Do not know	112 21.8%	8 25.8%	70 18.1%	14 13.6%	204 19.7%
	Total	513 100.0%	31 100.0%	387 100.0%	103 100.0%	1034 100.0%
National Health Authorities' (Ministry of Health, National Agency for Public Health) attitude	Very negative	8 1.6%	0 0.0%	3 0.8%	0 0.0%	11 1.1%
	Somewhat negative	13 2.5%	0 0.0%	5 1.3%	0 0.0%	18 1.7%
	Neutral	40 7.8%	1 3.1%	23 5.9%	6 5.8%	70 6.8%
	Somewhat positive	170 33.3%	15 46.9%	154 39.7%	25 24.3%	364 35.2%
	Very positive	215 42.2%	10 31.3%	171 44.1%	63 61.2%	459 44.4%
	Do not know	64 12.5%	6 18.8%	32 8.2%	9 8.7%	111 10.7%
	Total	510 100.0%	32 100.0%	388 100.0%	103 100.0%	1033 100.0%
Peoples' from community/ neighbourhood attitudes	Very negative	34 6.6%	2 6.3%	18 4.7%	1 1.0%	55 5.3%
	Somewhat negative	111 21.7%	5 15.6%	56 14.5%	12 11.8%	184 17.8%
	Neutral	217 42.4%	11 34.4%	162 42.0%	49 48.0%	439 42.5%
	Somewhat positive	52 10.2%	10 31.3%	74 19.2%	21 20.6%	157 15.2%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three or more doses	Total
Descriptive norms		N %	N %	N %	N %	N %
	Very positive	20 3.9%	2 6.3%	33 8.5%	11 10.8%	66 6.4%
	Do not know	78 15.2%	2 6.3%	43 11.1%	8 7.8%	131 12.7%
	Total	512 100.0%	32 100.0%	386 100.0%	102 100.0%	1032 100.0%
Religious leaders' attitudes	Very negative	73 14.3%	3 9.4%	35 9.1%	10 9.7%	121 11.7%
	Somewhat negative	75 14.6%	3 9.4%	63 16.3%	15 14.6%	156 15.1%
	Neutral	110 21.5%	11 34.4%	86 22.3%	20 19.4%	227 22.0%
	Somewhat positive	42 8.2%	1 3.1%	44 11.4%	17 16.5%	104 10.1%
	Very positive	17 3.3%	2 6.3%	23 6.0%	7 6.8%	49 4.7%
	Do not know	195 38.1%	12 37.5%	135 35.0%	34 33.0%	376 36.4%
	Total	512 100.0%	32 100.0%	386 100.0%	103 100.0%	1033 100.0%
Healthcare providers' attitudes	Very negative	8 1.6%	1 3.1%	3 0.8%	1 1.0%	13 1.3%
	Somewhat negative	15 2.9%	1 3.1%	5 1.3%	1 1.0%	22 2.1%
	Neutral	35 6.8%	1 3.1%	35 9.0%	5 4.9%	76 7.3%
	Somewhat positive	185 36.1%	14 43.8%	142 36.6%	32 31.1%	373 36.0%
	Very positive	218 42.6%	11 34.4%	174 44.8%	56 54.4%	459 44.3%
	Do not know	51 10.0%	4 12.5%	29 7.5%	8 7.8%	92 8.9%
	Total	512 100.0%	32 100.0%	388 100.0%	103 100.0%	1035 100.0%
Central public authorities' (government, parliament, president) attitudes	Very negative	6 1.2%	0 0.0%	5 1.3%	0 0.0%	11 1.1%
	Somewhat negative	13 2.5%	0 0.0%	3 0.8%	0 0.0%	16 1.5%
	Neutral	39 7.6%	1 3.1%	28 7.2%	5 4.9%	73 7.1%
	Somewhat positive	164 32.0%	17 53.1%	141 36.4%	36 35.0%	358 34.6%
	Very positive	221 43.2%	9 28.1%	161 41.6%	49 47.6%	440 42.6%
	Do not know	69 13.5%	5 15.6%	49 12.7%	13 12.6%	136 13.2%
	Total	512 100.0%	32 100.0%	387 100.0%	103 100.0%	1034 100.0%

5.4.2 Injunctive norms regarding COVID-19 vaccination in general population

For 73.7% (n=761) of respondents, personal attitudes towards vaccination against COVID-19 were among the strongest determinants of their intention to be vaccinated. The most influential social agents were family members (ranked among the top three most influential factors by 42.1%, n=435) and health care providers (36.2%, n=374), who had the strongest influence on vaccination intentions. The least influence on vaccination intentions was ascribed to religious leaders (ranked among the top three least influential factors by 41.9% (n=432) of respondents), media (35.3%, n=364) and community members (27.5%, n=286).

Table 31. Biggest and smallest self-ranked influence on intention to vaccinate against COVID-19

Potential Influences	Biggest self-reported influence			Smallest self-reported influence		
	1st rank	2st rank	3rd rank	1st rank	2st rank	3rd rank
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Own attitudes	643 62.2%	75 7.3%	43 4.2%	94 9.1%	6 0.6%	7 0.7%
Family	70 6.8%	289 27.9%	76 7.4%	74 7.2%	63 6.1%	8 0.8%
Friends	19 1.8%	54 5.3%	142 13.8%	78 7.5%	57 5.5%	56 5.4%
Local public authorities	25 2.4%	26 2.5%	19 1.9%	91 8.8%	68 6.6%	79 7.6%
National Health Authorities (Ministry of Health, National Agency for Public Health)	41 4.0%	56 5.5%	48 4.7%	40 3.9%	58 5.6%	51 5.0%
Community members/neighbours	10 0.9%	13 1.3%	17 1.6%	102 9.8%	117 11.3%	67 6.4%
Religious leaders	10 0.9%	12 1.2%	15 1.4%	223 21.6%	136 13.2%	73 7.1%
Healthcare providers	157 15.2%	120 11.6%	97 9.4%	77 7.5%	42 4.0%	30 2.9%
Central public authorities (government, parliament, president)	26 2.5%	25 2.4%	31 3.0%	80 7.8%	86 8.3%	62 6.0%
Media (TV, radio, newspapers, internet)	34 3.3%	21 2.0%	57 5.5%	174 16.9%	78 7.6%	112 10.8%

5.4.3 General population injunctive norms regarding COVID-19 vaccination

Respondents reported, having a moderately high quality of communication with their HCWs about COVID-19 vaccination (Mean=3.68, SD=0.96). Overall, 68.6% (n=708) of respondents reported that their doctor recommended them to get the vaccine against COVID-19, while only 15.5% (n=160) had no such experience, and 10.7% (n=110) had not visited a doctor since the outbreak of the COVID-19. A total of 47% (n=485) of respondents reported that they trusted their doctor's recommendation for COVID-19 vaccination, while larger proportion reported that their doctor answered all their questions about COVID-19 vaccines and listened to their concerns about COVID-19 vaccines (59.9%, n=619).

That their doctor had recommended them the COVID-19 vaccine was reported by 85.4% (n=88) of those who had received three or more doses, 84.4% (n=27) of incompletely vaccinated, 77% (n=298) of completely vaccinated and 57.8% (n=295) of those who had refused the vaccine. Also, that they trusted the doctor's recommendation on COVID-19 vaccination was confirmed by 79.6% (n=82) of those who took tree or more doses, 64.6% (n=250) of completely vaccinated, 61.3% (n=19) of incompletely vaccinated and only 26.2% (n=134) of vaccine refusing.

While less than half (44.7%, n=229) of vaccine refusing reported that their doctor answered all their questions regarding COVID-19 vaccines and listened to their concerns, 71.9% (n=23) of incompletely vaccinated, 73.1% (n=282) of completely vaccinated and 82.5% (n=85) of those who took three or more doses reported so.

Table 32. Distribution of scores on individual items of recommendations by HCWs regarding COVID-19 vaccination according to vaccination behaviour in general population

Vaccination Behaviours						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three or more doses	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C2.1.1 My doctor/ the doctor I visit most often recommended that I get vaccinated against COVID-19.	Strongly disagree	25 4.9%	1 3.1%	18 4.7%	2 1.9%	46 4.5%
	Disagree	71 13.9%	2 6.3%	36 9.3%	5 4.9%	114 11.0%
	Neither disagree nor agree	30 5.9%	0 0.0%	17 4.4%	7 6.8%	54 5.2%
	Agree	146 28.6%	16 50.0%	147 38.0%	40 38.8%	349 33.8%
	Strongly agree	149 29.2%	11 34.4%	151 39.0%	48 46.6%	359 34.8%
	I have not visited a doctor since the outbreak of the COVID-19	89 17.5%	2 6.3%	18 4.7%	1 1.0%	110 10.7%
	Total	510 100.0%	32 100.0%	387 100.0%	103 100.0%	1032 100.0%
C2.1.2 I trust my doctor's/ the doctor's I visit most often recommendation on COVID-19 vaccination.	Strongly disagree	70 13.7%	2 6.5%	21 5.4%	3 2.9%	96 9.3%
	Disagree	129 25.2%	6 19.4%	49 12.7%	4 3.9%	188 18.2%
	Neither disagree nor agree	99 19.3%	3 9.7%	53 13.7%	13 12.6%	168 16.3%
	Agree	87 17.0%	8 25.8%	148 38.2%	42 40.8%	285 27.6%
	Strongly agree	47 9.2%	11 35.5%	102 26.4%	40 38.8%	200 19.4%
	I have not visited a doctor since the outbreak of the COVID-19	80 15.6%	1 3.2%	14 3.6%	1 1.0%	96 9.3%
	Total	512 100.0%	31 100.0%	387 100.0%	103 100.0%	1033 100.0%
C2.1.3 My doctor/ the doctor I visit most often answers all my questions regarding COVID-19 vaccines and listens to my concerns.	Strongly disagree	33 6.4%	1 3.1%	16 4.1%	2 1.9%	52 5.0%
	Disagree	68 13.3%	1 3.1%	35 9.1%	1 1.0%	105 10.2%
	Neither disagree nor agree	90 17.6%	4 12.5%	38 9.8%	11 10.7%	143 13.8%
	Agree	142 27.7%	13 40.6%	169 43.8%	41 39.8%	365 35.3%
	Strongly agree	87 17.0%	10 31.3%	113 29.3%	44 42.7%	254 24.6%
	I have not visited a doctor since the outbreak of the COVID-19	92 18.0%	3 9.4%	15 3.9%	4 3.9%	114 11.0%
	Total	512 100.0%	32 100.0%	386 100.0%	103 100.0%	1033 100.0%

Respondents who received three or more doses and those who were completely or incompletely vaccinated were more likely to report a better quality of communication with their doctor regarding COVID-19 vaccination than those who refused the vaccine (Mean=4.22, Mean=3.88, Mean=3.95 vs. Mean=3.35, respectively, p< 0.001).

Table 33. Differences in the perception of HCW's recommendations regarding COVID-19 vaccination between the respondents exhibiting different vaccination behaviour

Vaccine behaviour	N	Mean	SD	Min	Max	p
Not vaccinated	403	3.35	0.90	1.00	5.00	< 0.001
Incompletely vaccinated	29	3.95	0.92	1.00	5.00	
Completely vaccinated (one or two doses)	363	3.88	0.94	1.00	5.00	
Three and more doses	99	4.22	0.76	1.00	5.00	

Respondents aged 50-64 (Mean=3.75) and 65 and over (Mean=3.89) rated the quality of communication with their doctor about COVID-19 vaccination as higher compared to respondents aged 18-34 (Mean=3.43) and 35-49 (Mean=4.60) (p<0.001). The quality of communication with their doctor about COVID-19 vaccination was also rated as better by those living in southern part of Moldova compared to Chisinau, North and Center (Mean=4.02 vs. Mean=3.66, Mean=3.55, Mean=3.63, respectively; p<0.001). People with chronic diseases also rated the quality of communication with their doctor as better than those who reported having no chronic diseases (Mean=3.79 vs. Mean=3.62, respectively; p<0.01). No difference in the appreciation of the quality of communication with their doctor was observed with respect to gender, education and type of settlement.

Table 25. Differences in the perception of recommendations by HCW regarding COVID-19 vaccination between diverse groups of respondents in general population

		N	Mean	SD	Min	Max	p
Gender	Male	383	3.63	1.02	1.00	5.00	0.213
	Female	511	3.71	0.90	1.00	5.00	
Age	18-34	190	3.43	1.00	1.00	5.00	<0.001
	35-49	232	3.60	0.89	1.00	5.00	
	50-64	242	3.75	0.95	1.00	5.00	
	65+	231	3.89	0.94	1.00	5.00	
Education	Less than primary and primary education	184	3.67	1.03	1.00	5.00	0.514
	Secondary education	472	3.65	0.98	1.00	5.00	
	Graduate and postgraduate education	238	3.74	0.85	1.00	5.00	
Settlement	Urban	379	3.68	0.91	1.00	5.00	0.948
	Rural	515	3.68	0.99	1.00	5.00	
Region	Mun. Chisinau	200	3.66	0.87	1.00	4.75	<0.001
	North	289	3.55	0.89	1.00	4.75	
	Center	253	3.63	0.99	1.00	5.00	
	South	151	4.02	1.06	1.00	5.00	
Chronic disease	Yes	306	3.79	0.90	1.00	5.00	<0.01
	No	588	3.62	0.98	1.00	5.00	

5.5 Environmental factors

5.5.1 Perception of lack of information related to COVID-19 vaccination in general population

Respondents did not perceive considerable lack of COVID-19 vaccine related information (Mean=2.74, SD=1.07).

Overall, 33.7% (n=349) of respondents reported that lack of information about COVID-19 vaccines made it difficult for them to decide whether to be vaccinated against COVID-19, while 39.3% (n=407) reported that incomplete information about COVID-19 vaccines they encountered confused them. Slightly higher percentage (42.3%, n=437) felt that contradictory information about the COVID-19 vaccine they encountered confused them. In addition, 55.9% (n=580) of respondents reported that they had absolutely all the information they needed about the COVID-19 vaccine/vaccination, while 12.1% (n=122) were ambivalent.

The view that lack of information about COVID-19 vaccines made it difficult to decide whether to get vaccinated against COVID-19 was supported by 34.2% (n=175) of those who refused the vaccine, 46.9% (n=15) of incompletely vaccinated, 34.6% (n=134) of completely vaccinated and 24.3% (n=25) of those who took three or more doses.

That they were confused by incomplete information about the COVID-19 vaccine was reported by 53.1% (n=17) incompletely vaccinated, 43.7% (n=224) of vaccine refusing, 37.1% (n=143) of completely vaccinated and 22.3% (n=23) of those who took three or more doses. Similarly, that they were confused by contradictory information was reported by 57.6% (n=19) of incompletely vaccinated, 47.7%, (n=244) of vaccine refusing, 38% (n=147) of completely vaccinated and 28.4% (n=29) of those who had received three or more doses.

That they were satisfied with the information they received about COVID-19 vaccines was reported by 72.1% (n=75) of those who took three or more doses, 64.4% (n=250) of completely vaccinated, 63.7% (n=21) of incompletely vaccinated and 45.8% (n=234) of those who were vaccine refusing.

Table 34. Distribution of scores on individual items measuring lack of information related to COVID-19 vaccination according to vaccination behaviour in general population

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (with one or two doses)	Three or more doses	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C4.1.1 It was hard for me to decide whether to vaccinate myself against COVID-19 because there was a lack of information about COVID-19 vaccines.	Strongly disagree	164 32.0%	4 12.5%	95 24.5%	38 36.9%	301 29.1%
	Disagree	110 21.5%	10 31.3%	119 30.7%	31 30.1%	270 26.1%
	Neither disagree nor agree	63 12.3%	3 9.4%	39 10.1%	9 8.7%	114 11.0%
	Agree	101 19.7%	10 31.3%	107 27.6%	22 21.4%	240 23.2%
	Strongly agree	74 14.5%	5 15.6%	27 7.0%	3 2.9%	109 10.5%
	Total	512 100.0%	32 100.0%	387 100.0%	103 100.0%	1034 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (with one or two doses)	Three or more doses	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C4.1.2 The incomplete information regarding the COVID-19 vaccines I came across made me confused.	Strongly disagree	123 24.0%	3 9.4%	88 22.8%	34 33.0%	248 24.0%
	Disagree	82 16.0%	7 21.9%	102 26.4%	35 34.0%	226 21.9%
	Neither disagree nor agree	84 16.4%	5 15.6%	53 13.7%	11 10.7%	153 14.8%
	Agree	146 28.5%	13 40.6%	118 30.6%	19 18.4%	296 28.6%
	Strongly agree	78 15.2%	4 12.5%	25 6.5%	4 3.9%	111 10.7%
	Total	513 100.0%	32 100.0%	386 100.0%	103 100.0%	1034 100.0%
C4.1.3 Contradictory information regarding the COVID-19 vaccines I came across made me confused.	Strongly disagree	119 23.3%	3 9.1%	89 23.0%	30 29.4%	241 23.3%
	Disagree	70 13.7%	8 24.2%	95 24.5%	37 36.3%	210 20.3%
	Neither disagree nor agree	78 15.3%	3 9.1%	56 14.5%	8 7.8%	145 14.0%
	Agree	160 31.3%	15 45.5%	122 31.5%	21 20.6%	318 30.8%
	Strongly agree	84 16.4%	4 12.1%	25 6.5%	6 5.9%	119 11.5%
	Total	511 100.0%	33 100.0%	387 100.0%	102 100.0%	1033 100.0%
C4.1.4 I had absolutely all the information I need regarding the COVID-19 vaccines/ vaccinations.	Strongly disagree	93 18.2%	2 6.1%	31 8.0%	6 5.8%	132 12.7%
	Disagree	90 17.6%	6 18.2%	57 14.7%	8 7.7%	161 15.5%
	Neither disagree nor agree	94 18.4%	4 12.1%	50 12.9%	15 14.4%	163 15.7%
	Agree	182 35.6%	16 48.5%	193 49.7%	58 55.8%	449 43.3%
	Strongly agree	52 10.2%	5 15.2%	57 14.7%	17 16.3%	131 12.6%
	Total	511 100.0%	33 100.0%	388 100.0%	104 100.0%	1036 100.0%

Significant differences in perceived lack of information about vaccination were found between respondents with different vaccination behaviours. Respondents who were completely vaccinated and who received three or more doses perceived significantly lower lack of information than those who were vaccine refusing and incompletely vaccinated (Mean=2.65, Mean=2.29 vs. Mean=2.90, Mean=3.00, respectively; $p< 0.001$).

Table 35. Differences in perception of lack of information between the respondents exhibiting different vaccine behaviour

Vaccine behaviour	N	Mean	SD	Min	Max	p
Not vaccinated	511	2.90	1.00	1.00	5.00	< 0.001
Incompletely vaccinated	32	3.00	0.96	1.00	4.75	
Completely vaccinated (one or two doses)	387	2.65	1.01	1.00	5.00	
Three and more doses	103	2.29	0.96	1.00	4.50	

Female respondents perceived a greater lack of information about COVID-19 vaccines than males (Mean=2.82 vs. Mean=2.66; respectively; p<0.01), as well as people from urban areas compared to people from rural areas (Mean=2.86 vs. Mean=2.65; respectively; p<0.01). People living in the central parts of Moldova perceived lower lack of information than those living in Chisinau, North and South (Mean=2.48 vs. Mean=2.84, Mean=2.86, Mean=2.85; respectively; p<0.001).

Table 36. Differences in perception of lack of information regarding COVID-19 vaccines between diverse groups of respondents in general population

		N	Mean	SD	Min	Max	p
Gender	Male	455	2.66	1.10	1.00	5.00	<0.01
	Female	578	2.82	1.05	1.00	5.00	
Age	18-34	215	2.74	1.01	1.00	5.00	0.415
	35-49	267	2.76	1.06	1.00	5.00	
	50-64	286	2.80	1.11	1.00	5.00	
	65+	265	2.67	1.10	1.00	5.00	
Education	Less than primary and primary education	223	2.76	1.12	1.00	5.00	0.563
	Secondary education	545	2.72	1.08	1.00	5.00	
	Graduate and postgraduate education	265	2.79	1.02	1.00	5.00	
Settlement	Urban	456	2.86	1.06	1.00	5.00	<0.01
	Rural	577	2.65	1.07	1.00	5.00	
Region	Mun. Chisinau	242	2.84	0.90	1.00	4.75	<0.001
	North	311	2.86	0.95	1.00	4.75	
	Center	294	2.48	1.09	1.00	5.00	
	South	186	2.85	1.34	1.00	5.00	
Chronic disease	Yes	341	2.79	1.06	1.00	5.00	0.140
	No	692	2.72	1.08	1.00	5.00	

5.5.2 Use of the sources of COVID-19 vaccination related information in general population

The most frequently (often and regularly) used sources of information about COVID-19 vaccination were family members (44.9%, n=464) and their doctor (37.6%, n=389), followed by friends (33.1%, n=342), social networks (24.4%, n=251), internet portals (24.3%, n=251) and health care professionals in the media (24.1%, n=249). The least used sources of information about COVID-19 vaccination were scientific literature (7.9%, n=82) and religious leaders (6.1%, n=62).

Table 37. Frequency of use of different sources of COVID-19 vaccination related information

Sources					
	Never	Rarely	Sometimes	Often	Regularly
	N (%)	N (%)	N (%)	N (%)	N (%)
Scientific literature	634 61.3%	188 18.2%	130 12.6%	57 5.5%	25 2.4%
National TV channels	264 35.3%	245 23.7%	218 21.1%	148 14.3%	58 5.6%
Regional TV channels	496 48.0%	216 20.9%	184 17.8%	99 9.6%	39 3.7%
Internet portals	387 37.4%	181 17.5%	214 20.7%	176 17.1%	75 7.2%
YouTube channels	450 43.6%	174 16.9%	194 18.8%	158 15.3%	55 5.4%
Social networks	406 39.3%	169 16.4%	206 20.0%	178 17.3%	73 7.1%
Family	152 14.8%	170 16.4%	247 23.9%	307 29.7%	157 15.2%
Friends	201 19.5%	208 20.1%	282 27.3%	275 26.6%	67 6.5%
Your doctor/the doctor you visit most often	226 21.9%	179 17.3%	239 23.2%	278 26.9%	111 10.7%
Healthcare professionals in media	334 32.3%	237 23.0%	213 20.7%	195 18.9%	54 5.2%
Religious leaders	673 65.1%	193 18.7%	104 10.1%	45 4.4%	17 1.7%
Central public authorities	510 49.4%	217 21.0%	179 17.3%	103 10.0%	24 2.4%
Local public authorities	508 49.2%	222 21.5%	180 17.4%	97 9.4%	25 2.5%
International organizations (WHO, UNICEF, CDC)	468 45.3%	186 18.0%	211 20.5%	139 13.4%	29 2.8%

Irrespective of their vaccination behaviour, a small number of respondents reported often and regular use of scientific literature to obtain information about COVID-19 vaccination, with the lowest proportion of those who had refused vaccination (5.5%, n=28), followed by those who were completely vaccinated (8.3%, n=32), those who were incompletely vaccinated (12.5%, n=4) and those who took three or more doses (15.7%, n=16).

National TV channels were used often and regularly as a source of COVID-19 vaccine-related information by 29.1% (n=30) of those who took three or more doses, 24.5% (n=95) of completely vaccinated, 21.9% (n=7) of incompletely vaccinated and 14.7% (n=75) of vaccine refusing.

Often and regular use of regional TV channels as a source of information was reported by 21.9% (n=7) of incompletely vaccinated, 19.9% (n=77) of completely vaccinated, 10.8% (n=11) of those who took three or more doses and 8.3% (n=42) of those who refused the vaccine.

Internet portals were used most by those who were completely vaccinated (32.1%, n=124), followed by those who took three or more doses (28.1%, n=29), those who were incompletely vaccinated (24.3%, n=8) and those who refused the vaccine (18%, n=92).

YouTube as a source of COVID-19 vaccine related information was often and regularly used by 34.4% (n=11) of incompletely vaccinated, 27.9% (n=108) of completely vaccinated, 21.4% (n=22) of those who took three or more doses, and 14.2% (n=73) of vaccine refusing. Similarly, social networks were used by 37.5% (n=12) of incompletely vaccinated, 31.4% (n=32) of those who took three or more doses, 29.5% (n=114) of completely vaccinated and 18% (n=92) of vaccine refusing.

Family as a source of information about COVID-19 vaccination was often and regularly used by 52.9% (n=55) of those who took three or more doses, 51.5% (n=17) of incompletely vaccinated, 50.4% (n=195) of completely vaccinated , and 38.5% (n=197) of vaccine refusing, while that they often and regularly rely on friends as a source of information was reported by 50% (n=16) of incompletely vaccinated, 37.9% (n=39) of those who took three or more doses, 37% (n=143) of completely vaccinated , and 28.1% (n=144) of vaccine refusing.

Overall, 21.7% (n=111) of vaccine refusing often and regularly used information related to COVID-19 vaccines provided by their doctor, whereas this percentage was higher among those who were incompletely vaccinated (57.6%, n=19), completely vaccinated (50.9%, n=197) and those received three or more doses (61.8%, n=63). Also, information from healthcare professionals in the media were used less often by vaccine refusing (16.3%, n=84) than by those who were incompletely vaccinated (31.2%, n=10), completely vaccinated (28.5%, n=110), and those who took three or more doses (43.7%, n=45).

Religious leaders as sources of COVID-19 vaccine-related information were relied on often and regularly by only 5.3% (n=27) of vaccine refusing, 6.4% (n=2) of incompletely vaccinated, 6.2% (n=24) of completely vaccinated and 9.8% (n=10) of those who took three or more doses.

Central public authorities as sources of COVID-19 vaccine-related information were often and regularly used by 23.6% (n=24) of those who took three or more doses, 18.8% (n=6) of incompletely vaccinated, 14.3% (n=55) of completely vaccinated, and 8% (n=41) of vaccine refusing. Similarly, local public authorities were often and regularly used by 24.5% (n=25) of those who took three or more doses, 15% (n=58) of completely vaccinated, 9.4% (n=3) of incompletely vaccinated, and 6.9% (n=35) of vaccine refusing.

While only 9.2% (n=47) of vaccine refusing often and regularly relied on information obtained from international organizations (WHO, UNICEF, CDC), larger proportion of incompletely vaccinated (21.2%, n=7), completely vaccinated (21%, n=81) and those who took three or kore doses (21.3%, n=32) used this source of information.

Table 38. Distribution of use of sources of COVID-19 vaccination related information according to vaccination behaviour

		Vaccination Behaviour				
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (with one or two doses)	Three or more doses	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
Scientific literature	Never	354 69.3%	17 53.1%	211 54.7%	51 50.0%	633 61.4%
	Rarely	83 16.2%	6 18.8%	80 20.7%	19 18.6%	188 18.2%
	Sometimes	46 9.0%	5 15.6%	63 16.3%	16 15.7%	130 12.6%
	Often	21 4.1%	3 9.4%	22 5.7%	10 9.8%	56 5.4%
	Regularly	7 1.4%	1 3.1%	10 2.6%	6 5.9%	24 2.3%
	Total	511 100.0%	32 100.0%	386 100.0%	102 100.0%	1031 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (with one or two doses)	Three or more doses	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
National TV channels	Never	213 41.7%	11 34.4%	116 29.9%	24 23.3%	364 35.2%
	Rarely	126 24.7%	9 28.1%	89 22.9%	21 20.4%	245 23.7%
	Sometimes	97 19.0%	5 15.6%	88 22.7%	28 27.2%	218 21.1%
	Often	56 11.0%	6 18.8%	67 17.3%	19 18.4%	148 14.3%
	Regularly	19 3.7%	1 3.1%	28 7.2%	11 10.7%	59 5.7%
	Total	511 100.0%	32 100.0%	388 100.0%	103 100.0%	1034 100.0%
Regional TV channels	Never	277 54.2%	13 40.6%	158 40.8%	48 47.1%	496 48.1%
	Rarely	109 21.3%	8 25.0%	81 20.9%	18 17.6%	216 20.9%
	Sometimes	83 16.2%	4 12.5%	71 18.3%	25 24.5%	183 17.7%
	Often	33 6.5%	4 12.5%	56 14.5%	6 5.9%	99 9.6%
	Regularly	9 1.8%	3 9.4%	21 5.4%	5 4.9%	38 3.7%
	Total	511 100.0%	32 100.0%	387 100.0%	102 100.0%	1032 100.0%
Internet portals	Never	225 43.9%	10 30.3%	114 29.5%	38 36.9%	387 37.4%
	Rarely	99 19.3%	9 27.3%	60 15.5%	13 12.6%	181 17.5%
	Sometimes	96 18.8%	6 18.2%	89 23.0%	23 22.3%	214 20.7%
	Often	66 12.9%	5 15.2%	87 22.5%	19 18.4%	177 17.1%
	Regularly	26 5.1%	3 9.1%	37 9.6%	10 9.7%	76 7.3%
	Total	512 100.0%	33 100.0%	387 100.0%	103 100.0%	1035 100.0%
YouTube channels	Never	262 51.2%	10 31.3%	134 34.6%	45 43.7%	451 43.6%
	Rarely	87 17.0%	6 18.8%	69 17.8%	12 11.7%	174 16.8%
	Sometimes	90 17.6%	5 15.6%	76 19.6%	24 23.3%	195 18.9%
	Often	57 11.1%	9 28.1%	75 19.4%	17 16.5%	158 15.3%
	Regularly	16 3.1%	2 6.3%	33 8.5%	5 4.9%	56 5.4%
	Total	512 100.0%	32 100.0%	387 100.0%	103 100.0%	1034 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (with one or two doses)	Three or more doses	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
Social networks (Facebook, Viber, Twitter, WhatsApp)	Never	238 46.6%	8 25.0%	122 31.6%	38 37.3%	406 39.4%
	Rarely	91 17.8%	5 15.6%	59 15.3%	14 13.7%	169 16.4%
	Sometimes	90 17.6%	7 21.9%	91 23.6%	18 17.6%	206 20.0%
	Often	70 13.7%	5 15.6%	80 20.7%	22 21.6%	177 17.2%
	Regularly	22 4.3%	7 21.9%	34 8.8%	10 9.8%	73 7.1%
	Total	511 100.0%	32 100.0%	386 100.0%	102 100.0%	1031 100.0%
Family	Never	92 18.0%	2 6.1%	44 11.4%	14 13.7%	152 14.7%
	Rarely	92 18.0%	6 18.2%	58 15.0%	14 13.7%	170 16.5%
	Sometimes	130 25.4%	8 24.2%	90 23.3%	19 18.6%	247 23.9%
	Often	135 26.4%	9 27.3%	127 32.8%	36 35.3%	307 29.7%
	Regularly	62 12.1%	8 24.2%	68 17.6%	19 18.6%	157 15.2%
	Total	511 100.0%	33 100.0%	387 100.0%	102 100.0%	1033 100.0%
Friends	Never	120 23.4%	3 9.4%	61 15.8%	17 16.5%	201 19.4%
	Rarely	108 21.1%	7 21.9%	74 19.1%	19 18.4%	208 20.1%
	Sometimes	140 27.3%	6 18.8%	109 28.2%	28 27.2%	283 27.4%
	Often	120 23.4%	8 25.0%	113 29.2%	34 33.0%	275 26.6%
	Regularly	24 4.7%	8 25.0%	30 7.8%	5 4.9%	67 6.5%
	Total	512 100.0%	32 100.0%	387 100.0%	103 100.0%	1034 100.0%
Your doctor/ the doctor you visit most often	Never	156 30.5%	4 12.1%	54 14.0%	12 11.8%	226 21.9%
	Rarely	102 19.9%	5 15.2%	64 16.5%	8 7.8%	179 17.3%
	Sometimes	143 27.9%	5 15.2%	72 18.6%	19 18.6%	239 23.1%
	Often	95 18.6%	10 30.3%	133 34.4%	41 40.2%	279 27.0%
	Regularly	16 3.1%	9 27.3%	64 16.5%	22 21.6%	111 10.7%
	Total	512 100.0%	33 100.0%	387 100.0%	102 100.0%	1034 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (with one or two doses)	Three or more doses	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
Healthcare professionals in media	Never	207 40.4%	5 15.6%	97 25.2%	25 24.3%	334 32.3%
	Rarely	124 24.2%	12 37.5%	89 23.1%	12 11.7%	237 22.9%
	Sometimes	98 19.1%	5 15.6%	89 23.1%	21 20.4%	213 20.6%
	Often	72 14.0%	5 15.6%	86 22.3%	32 31.1%	195 18.9%
	Regularly	12 2.3%	5 15.6%	24 6.2%	13 12.6%	54 5.2%
	Total	513 100.0%	32 100.0%	385 100.0%	103 100.0%	1033 100.0%
Religious leaders	Never	332 64.8%	18 58.1%	256 66.3%	66 64.7%	672 65.2%
	Rarely	97 18.9%	6 19.4%	72 18.7%	17 16.7%	192 18.6%
	Sometimes	56 10.9%	5 16.1%	34 8.8%	9 8.8%	104 10.1%
	Often	22 4.3%	1 3.2%	15 3.9%	7 6.9%	45 4.4%
	Regularly	5 1.0%	1 3.2%	9 2.3%	3 2.9%	18 1.7%
	Total	512 100.0%	31 100.0%	386 100.0%	102 100.0%	1031 100.0%
Central public authorities	Never	282 55.2%	18 56.3%	167 43.3%	42 41.2%	509 49.4%
	Rarely	104 20.4%	3 9.4%	92 23.8%	18 17.6%	217 21.0%
	Sometimes	84 16.4%	5 15.6%	72 18.7%	18 17.6%	179 17.4%
	Often	35 6.8%	3 9.4%	47 12.2%	17 16.7%	102 9.9%
	Regularly	6 1.2%	3 9.4%	8 2.1%	7 6.9%	24 2.3%
	Total	511 100.0%	32 100.0%	386 100.0%	102 100.0%	1031 100.0%
Local public authorities	Never	281 55.0%	17 53.1%	166 43.0%	44 43.1%	508 49.3%
	Rarely	103 20.2%	5 15.6%	95 24.6%	19 18.6%	222 21.5%
	Sometimes	92 18.0%	7 21.9%	67 17.4%	14 13.7%	180 17.5%
	Often	28 5.5%	3 9.4%	48 12.4%	18 17.6%	97 9.4%
	Regularly	7 1.4%	0 0.0%	10 2.6%	7 6.9%	24 2.3%
	Total	511 100.0%	32 100.0%	386 100.0%	102 100.0%	1031 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (with one or two doses)	Three or more doses	Total
Information sources		N (%)	N (%)	N (%)	N (%)	N (%)
International organizations (WHO, UNICEF, CDC)	Never	276 53.9%	15 45.5%	144 37.2%	33 32.4%	468 45.3%
	Rarely	90 17.6%	4 12.1%	75 19.4%	18 17.6%	187 18.1%
	Sometimes	99 19.3%	7 21.2%	87 22.5%	19 18.6%	212 20.5%
	Often	40 7.8%	6 18.2%	68 17.6%	24 23.5%	138 13.3%
	Regularly	7 1.4%	1 3.0%	13 3.4%	8 7.8%	29 2.8%
	Total	512 100.0%	33 100.0%	387 100.0%	102 100.0%	1034 100.0%

5.5.3 Perception of COVID-19 vaccination related structural barriers in general population

On average, respondents reported a very low level of structural barriers (Mean=1.56, SD=0.68) related to vaccination against COVID-19.

A large majority of respondents disagreed or strongly disagreed with the statement that they did not know where and how to get the COVID-19 vaccine (90.4%, n=933). Even 92.3% (n=955) disagreed or strongly disagreed with the statement that there was no vaccination centre or opportunity to get vaccinated against COVID-19 nearby. Most respondents also disagreed or strongly disagreed that it was too burdensome in terms of time (92.7%, n=959) or money to travel (93.5%, n=967) to the COVID-19 vaccination centre. Also, 90.8% (n=938) disagreed or strongly disagreed that it was difficult to make a vaccination appointment, and 83.2% (n=859) disagreed or strongly disagreed that they could not get the vaccine they wanted.

Similar proportions of vaccine refusing (4.7%, n=24), incompletely vaccinated (12.6%, n=4), completely vaccinated (6.2%, n=24) and those who received three or more doses (5.9%, n=6) reported not knowing where and how to get COVID-19 vaccine. Further, small proportions of vaccine refusing (4.3%, n=22), incompletely vaccinated (6.3%, n=2), completely vaccinated (4.9%, n=19) and those who received three or more doses (5.8%, n=6) reported that there was no vaccination centre or opportunity to receive the COVID-19 vaccine nearby. The opinion that getting to the COVID-19 vaccination centre was too burdensome in terms of time was supported by 4.7% (n=24) of vaccine refusing, 6.2% (n=2) of incompletely vaccinated, 4.7% (n=18) of completely vaccinated, and 5.9% (n=6) of those who received three or more doses. Similarly, the opinion that it was too burdensome to get to the COVID-19 vaccination centre in terms of money spent on travel was shared by 3.3% (n=17) of vaccine refusing, 3.1% (n=1) of incompletely vaccinated, 3.3% (n=13) of completely vaccinated, and 5.9% (n=6) of those who received three or more doses. Also, only 4.1% (n=21) of vaccine refusing, 6.2% (n=2) of incompletely vaccinated, 4.6% (n=18) of completely vaccinated, and 4.9% (n=5) of those who received three or more doses agreed or strongly agreed that it was difficult for them to make a vaccination appointment. That they couldn't get the COVID-19 vaccine they wanted was shared by 6.3% (n=66) of vaccine refusing, 12.5% (n=4) of incompletely vaccinated, 13.2% (n=51) of completely vaccinated, and 14.6% (n=15) of those who received three or more doses.

Table 39. Distribution of scores on individual items measuring COVID-19 vaccination related structural barriers according to vaccination behaviour

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three or more doses	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C5.1 I did not know where and how I could get the COVID-19 vaccines.	Strongly disagree	311 60.7%	14 43.8%	203 52.6%	70 68.6%	598 57.9%
	Disagree	151 29.5%	13 40.6%	147 38.1%	24 23.5%	335 32.5%
	Neither disagree nor agree	26 5.1%	1 3.1%	12 3.1%	2 2.0%	41 4.0%
	Agree	18 3.5%	2 6.3%	17 4.4%	5 4.9%	42 4.1%
	Strongly agree	6 1.2%	2 6.3%	7 1.8%	1 1.0%	16 1.6%
	Total	512 100.0%	32 100.0%	386 100.0%	102 100.0%	1032 100.0%
C5.2 There is no vaccination center or opportunity to get vaccinated against COVID-19 close by.	Strongly disagree	326 63.7%	17 53.1%	223 57.6%	69 66.3%	635 61.4%
	Disagree	145 28.3%	12 37.5%	137 35.4%	26 25.0%	320 30.9%
	Neither disagree nor agree	19 3.7%	1 3.1%	8 2.1%	3 2.9%	31 3.0%
	Agree	19 3.7%	2 6.3%	15 3.9%	5 4.8%	41 4.0%
	Strongly agree	3 0.6%	0 0.0%	4 1.0%	1 1.0%	8 0.8%
	Total	512 100.0%	32 100.0%	387 100.0%	104 100.0%	1035 100.0%
C5.3 It is too burdensome to get to the vaccination center for COVID-19 in terms of time.	Strongly disagree	323 63.1%	17 53.1%	226 58.2%	68 66.0%	634 61.3%
	Disagree	145 28.3%	13 40.6%	141 36.3%	26 25.2%	325 31.4%
	Neither disagree nor agree	20 3.9%	0 0.0%	3 0.8%	3 2.9%	26 2.5%
	Agree	23 4.5%	1 3.1%	15 3.9%	5 4.9%	44 4.3%
	Strongly agree	1 0.2%	1 3.1%	3 0.8%	1 1.0%	6 0.6%
	Total	512 100.0%	32 100.0%	388 100.0%	103 100.0%	1035 100.0%

Vaccination Behaviour						
		Not vaccinated	Incompletely vaccinated	Completely vaccinated (one or two doses)	Three or more doses	Total
Items		N (%)	N (%)	N (%)	N (%)	N (%)
C5.4 It is too burdensome to get to the vaccination center for COVID-19 in terms of money spent on travelling.	Strongly disagree	322 62.9%	18 56.3%	231 59.7%	69 67.0%	640 61.9%
	Disagree	152 29.7%	13 40.6%	137 35.4%	25 24.3%	327 31.6%
	Neither disagree nor agree	21 4.1%	0 0.0%	6 1.6%	3 2.9%	30 2.9%
	Agree	15 2.9%	1 3.1%	11 2.8%	5 4.9%	32 3.1%
	Strongly agree	2 0.4%	0 0.0%	2 0.5%	1 1.0%	5 0.5%
	Total	512 100.0%	32 100.0%	387 100.0%	103 100.0%	1034 100.0%
C5.5 It was difficult to make an appointment for vaccination against COVID-19	Strongly disagree	320 62.5%	15 46.9%	225 58.3%	72 69.9%	632 61.2%
	Disagree	139 27.1%	15 46.9%	129 33.4%	23 22.3%	306 29.6%
	Neither disagree nor agree	32 6.3%	0 0.0%	14 3.6%	3 2.9%	49 4.7%
	Agree	18 3.5%	1 3.1%	16 4.1%	4 3.9%	39 3.8%
	Strongly agree	3 0.6%	1 3.1%	2 0.5%	1 1.0%	7 0.7%
	Total	512 100.0%	32 100.0%	386 100.0%	103 100.0%	1033 100.0%
C5.6 I couldn't get the COVID-19 vaccine I wanted.	Strongly disagree	312 61.1%	12 37.5%	194 50.3%	61 59.2%	579 56.1%
	Disagree	123 24.1%	14 43.8%	124 32.1%	19 18.4%	280 27.1%
	Neither disagree nor agree	44 8.6%	2 6.3%	17 4.4%	8 7.8%	71 6.9%
	Agree	22 4.3%	3 9.4%	39 10.1%	12 11.7%	76 7.4%
	Strongly agree	10 2.0%	1 3.1%	12 3.1%	3 2.9%	26 2.5%
	Total	511 100.0%	32 100.0%	386 100.0%	103 100.0%	1032 100.0%

There were statistically significant differences between respondents with diverse vaccine behaviour in their perception of structural barriers ($p<0.05$). Incompletely vaccinated participants (Mean=1.72) perceived structural barriers as higher than those who were vaccine refusing (Mean=1.53), who were completely vaccinated (Mean=1.60) or took three or more doses (Mean=1.52).

Table 40. Differences in perception of COVID-19 vaccination related structural barriers between the respondents exhibiting different vaccine behaviour

Vaccine behaviour	N	Mean	SD	Min	Max	p
Not vaccinated	511	1.53	0.70	1.00	5.00	< 0.05
Incompletely vaccinated	32	1.72	0.69	1.00	4.00	
Completely vaccinated (one or two doses)	387	1.60	0.64	1.00	4.00	
Three and more doses	103	1.52	0.70	1.00	4.00	

Compared to men, women were more likely to perceive barriers as higher (Mean=1.51 vs. Mean=1.60, respectively; p<0.05). Barriers were also perceived as higher by people living in urban areas compared to those living in rural areas (Mean=1.66 vs. Mean=1.48, respectively; p<0.001), and by people living in Chisinau compared to those living in North, Center and South (Mean=1.72 vs. Mean=1.52, Mean=1.47, Mean=1.55, respectively; p<0.001).

Table 41. Differences in perception of COVID-19 vaccination related structural barriers between diverse groups in general population

		N	Mean	SD	Min	Max	p
Gender	Male	455	1.51	0.66	1.00	5.00	<0.05
	Female	578	1.60	0.69	1.00	4.00	
Age	18-34	215	1.60	0.68	1.00	4.00	0.220
	35-49	267	1.60	0.71	1.00	4.00	
	50-64	286	1.52	0.68	1.00	5.00	
	65+	265	1.52	0.63	1.00	4.00	
Education	Less than primary and primary education	223	1.63	0.76	1.00	4.00	0.098
	Secondary education	545	1.52	0.67	1.00	5.00	
	Graduate and postgraduate education	265	1.57	0.60	1.00	4.00	
Settlement	Urban	456	1.66	0.70	1.00	5.00	<0.001
	Rural	577	1.48	0.65	1.00	4.00	
Region	Mun. Chisinau	242	1.72	0.72	1.00	5.00	<0.001
	North	311	1.52	0.58	1.00	3.17	
	Center	294	1.47	0.63	1.00	4.00	
	South	186	1.55	0.79	1.00	4.00	
Chronic disease	Yes	341	1.57	0.65	1.00	5.00	0.635
	No	692	1.56	0.69	1.00	4.00	

5.6 Relationship between behaviour drivers/factors and vaccination behaviour in general population

5.6.1 Socio-demographic characteristics as predictors COVID-19 vaccination behaviour; predicting likelihood of taking three or more vaccine doses vs. being vaccine refusing/incompletely vaccinated

Binary logistic linear regression analysis was used to determine whether socio-demographic characteristics predicted COVID-19 vaccination behaviour in the general population. The impact of socio-demographic characteristics on the likelihood of taking three or more doses of vaccine relative to be vaccine refusing/incompletely vaccinated was assessed.

Older respondents were more likely to have received three or more vaccine doses relative to be vaccine refusing (OR=1.03, p<0.05). Relative to those with less than primary/primary education, those with graduate and postgraduate degree were more likely to have received three or more vaccine doses (OR=3.22, p<0.01). Full-time employed (OR=4.78, p<0.01) were more likely to have received

three or more vaccine doses relative to unemployed. Relative to people living in Chisinau, people living in South were less likely to receive three or more vaccine doses (OR=0.27, p<0.01). The model was statistically significant $\chi^2(19) = 91.547$, $p<0.001$, and explained 22.7% (Nagelkerke R^2) of variance in vaccination behaviour.

Table 42. Association between socio-demographic characteristics and likelihood of taking three or more vaccine doses vs. being vaccine refusing/incompletely vaccinated (multivariate binary logistic regression analysis)

Socio-demographic characteristics		β	SE	Wald	Exp(B)	95% C.I.		p
Age		.027	.012	5.225	1.027	1.004	1.051	<0.05
Education	Less than primary/ primary education							
	Secondary education	0.233	0.342	0.466	1.263	0.646	2.468	0.495
	Graduate and postgraduate education	1.169	0.373	9.821	3.219	1.550	6.689	<0.01
Employment	Unemployed							
	Part-time employed	1.109	0.541	4.196	3.031	1.049	8.754	0.041
	Full-time employed	1.564	0.460	11.544	4.779	1.938	11.781	<0.01
	Self-employed	0.932	0.919	1.030	2.541	0.420	15.380	0.310
	Student	-17.355	7091.898	0.000	0.000	0.000	.	0.998
	Retired	0.618	0.548	1.269	1.855	0.633	5.432	0.260
Relationship status	Single							
	Married	0.386	0.425	0.823	1.471	0.639	3.387	0.364
	Divorced	-0.616	0.662	0.867	0.540	0.148	1.975	0.352
	Widowed	0.185	0.511	0.131	1.203	0.442	3.273	0.717
Region	Mun. Chisinau							
	North	-0.533	0.322	2.741	0.587	0.312	1.103	0.098
	Center	-0.470	0.325	2.099	0.625	0.331	1.181	0.147
	South	-1.321	0.474	7.765	0.267	0.105	0.676	<0.01
Chronic disease	Yes							
	No	-0.544	0.292	3.472	0.580	0.327	1.029	0.062
Health status	Very good							
	Good	1.002	0.780	1.649	2.724	0.590	12.571	0.199
	Average	0.941	0.790	1.420	2.563	0.545	12.052	0.233
	Bad	0.932	0.869	1.149	2.539	0.462	13.946	0.284
	Very bad	-18.633	11057.463	0.000	0.000	0.000	.	0.999

5.6.2 Socio-demographic characteristics as predictors COVID-19 vaccination behaviour; predicting likelihood of being completely vaccinated vs. being vaccine refusing/incompletely vaccinated

Binary logistic linear regression analysis was used to assess the impact of socio-demographic characteristics on the likelihood of being completely vaccinated relative to be vaccine refusing/ incompletely vaccinated.

Relative to those with less than primary/primary education, those with graduate and postgraduate degree were more likely to be completely vaccinated (OR=2.27, p<0.001). Part-time employed (OR=1.88, p<0.05), full-time employed (OR=2.62, p<0.001) and self-employed (OR=4.18, p<0.01) were more likely to be completely vaccinated relative to unemployed. People who reported their income as good (OR=0.26, p<0.05), average (OR=0.22, p<0.05), bad (OR=0.25, p<0.05) or very bad (OR=0.18, p<0.05) were less likely to be completely vaccinated relative to those who reported to have a very good income. Relative to people living in Chisinau, people living in North were less likely to be completely vaccinated (OR=0.63, p<0.05). People describing their general health status as average were more

likely to be completely vaccinated relative to those who described their health status as very good (OR=2.87, p<0.01). The model was statistically significant $\chi^2(19) = 102.429$, $p<0.001$, and explained 14% (Nagelkerke R^2) of variance in vaccination behaviour.

Table 43. Association between socio-demographic characteristics and likelihood of completely vaccinated vs. being vaccine refusing/incompletely vaccinated (multivariate binary logistic regression analysis)

Socio-demographic characteristics		β	SE	Wald	Exp(B)	95% C.I.		p
Education	Less than primary/ primary education							
	Secondary education	0.287	0.190	2.294	1.333	.919	1.932	0.130
	Graduate and postgraduate education	0.818	0.231	12.580	2.267	1.442	3.564	<0.001
Employment	Unemployed							
	Part-time employed	0.633	0.272	5.397	1.883	1.104	3.213	<0.05
	Full-time employed	0.962	0.227	17.963	2.616	1.677	4.081	<0.001
	Self-employed	1.432	0.419	11.656	4.185	1.840	9.520	<0.01
	Student	-0.104	0.432	0.058	0.901	0.386	2.102	0.810
	Retired	0.341	0.228	2.232	1.406	0.899	2.200	0.135
Income	Very good							
	Good	-1.330	0.594	5.005	0.265	0.083	0.848	<0.05
	Average	-1.499	0.590	6.446	0.223	0.070	0.711	<0.05
	Bad	-1.393	0.609	5.238	0.248	0.075	0.819	<0.05
	Very bad	-1.729	0.684	6.395	0.177	0.046	0.678	<0.05
Region	Mun. Chisinau							
	North	-0.463	0.218	4.515	0.629	0.411	0.965	<0.05
	Center	-0.446	0.227	3.858	0.640	0.410	0.999	0.050
	South	-0.175	0.243	0.519	0.840	0.522	1.351	0.471
Type of settlement	Urban							
	Rural	-0.127	0.169	0.565	0.881	0.633	1.226	0.452
Health status	Very good							
	Good	0.598	0.331	3.263	1.818	0.950	3.477	0.071
	Average	1.053	0.343	9.439	2.866	1.464	5.609	<0.01
	Bad	0.559	0.440	1.612	1.749	0.738	4.147	0.204
	Very bad	1.025	0.651	2.479	2.788	0.778	9.992	0.115

5.6.3 Psychological factors as predictors of COVID-19 vaccination behaviour; predicting likelihood of taking three or more vaccine doses vs. being vaccine refusing

Multivariate binary logistic regression analysis was conducted in order to assess the impact of psychological factors on the likelihood of taking three or more vaccine doses relative to be vaccine refusing.

People who had more positive attitudes towards COVID-19 vaccine safety (OR=2.53, p<0.001), were more likely to receive three or more doses of vaccine, as well as those who manifested higher collective responsibility (were more scared that if they got sick, they could transmit it to others who could get very sick (OR=1.42, p<0.05). The model was statistically significant $\chi^2(10) = 153.253$, $p<0.001$, and explained 44.4% (Nagelkerke R^2) of variance in vaccination behaviour.

Table 44. Association between psychological factors and likelihood of taking three or more vaccine doses relative to be vaccine refusing

Psychological factors	β	SE	Wald	Exp(B)	95%C.I.		p
Vaccine efficacy	0.493	0.314	2.461	1.637	.884	3.030	0.117
Vaccine safety	0.927	0.265	12.237	2.527	1.503	4.249	<0.001
Danger of disease	0.323	0.214	2.280	1.382	0.908	2.103	0.131
Societal trust	0.155	0.305	0.258	1.168	0.642	2.125	0.612
Trust in their doctor as a source of vaccine-related information	0.255	0.143	3.194	1.291	0.976	1.708	0.074
Indirect personal experience*	0.190	0.327	0.338	1.209	0.638	2.293	0.561
Perceived collective responsibility**	0.351	0.176	3.992	1.421	1.007	2.004	<0.05
Perceived collective responsibility***	0.247	0.176	1.968	1.281	0.906	1.809	0.161
Conspiracy beliefs	0.341	0.260	1.722	1.406	0.845	2.340	0.189
Preference for intuitive thinking	-0.078	0.041	3.639	0.925	0.853	1.002	0.056

* *I personally know someone who experienced a serious adverse reaction after receiving the COVID-19 vaccine.*

** *I am scared that if I get sick with COVID-19. I could transmit it to others who could get very sick (have a very severe form of the disease).*

*** *It is important that we all get vaccinated against COVID-19 in order to achieve collective immunity*

5.6.4 Psychological factors as predictors of COVID-19 vaccination behaviour; predicting likelihood of being completely vaccinated vs. being vaccine refusing

Multiple binary logistic regression analyses was conducted in order to assess the impact of psychological factors on the likelihood of being completely vaccinated relative to be vaccine refusing.

People who had more positive attitudes towards COVID-19 vaccine safety (OR=2.04, p<0.001), who trusted information from regional TV channels more (OR=1.53, p<0.01), and who had a higher sense of collective responsibility (who believed to a higher extent that It is important for all people to get vaccinated against COVID-19 in order to achieve collective immunity) (OR=1.50, p<0.001) were more likely to be completely vaccinated relative to vaccine refusing. The model was statistically significant $\chi^2(11) = 200.233$, $p<0.001$, and explained 35.7% (Nagelkerke R^2) of variance in vaccination behaviour.

Table 45. Association between psychological factors and likelihood of taking three or more vaccine doses relative to be vaccine refusing

Psychological factors	β	SE	Wald	Exp(B)	95%C.I.		p
Vaccine efficacy	0.027	0.180	0.023	1.028	0.723	1.461	0.879
Vaccine safety	0.712	0.167	18.246	2.039	1.470	2.827	<0.001
Danger of disease	0.115	0.135	0.726	1.122	0.861	1.460	0.394
Societal trust	0.033	0.194	0.029	1.034	0.707	1.512	0.864
Trust in regional TV channels as a source of vaccine-related information	0.428	0.124	11.996	1.534	1.204	1.954	<0.01
Trust in religious leaders as a source of vaccine-related information	-0.158	0.116	1.859	0.854	0.680	1.072	0.173
Trust in international organizations (WHO, UNICEF, CDC) as a source of vaccine-related information	-0.014	0.098	0.022	0.986	0.813	1.195	0.883
Indirect personal experience*	-0.069	0.197	0.124	0.933	0.634	1.373	0.725

Psychological factors	β	SE	Wald	Exp(B)	95%C.I.		p
Perceived collective responsibility**	0.138	0.097	2.030	1.148	0.950	1.387	0.154
Perceived collective responsibility***	0.403	0.106	14.548	1.496	1.216	1.840	<0.001
Conspiracy beliefs	-0.024	0.162	0.022	0.976	0.711	1.340	0.882

* *I personally know someone who experienced a serious diverse reaction after receiving the COVID-19 vaccine.*

** *I am scared that if I get sick with COVID-19. I could transmit it to others who could get very sick (have a very severe form of the disease).*

*** *It is important that we all get vaccinated against COVID-19 in order to achieve collective immunity*

5.6.5 Sociological factors as predictors of COVID-19 vaccination behaviour; predicting likelihood of taking three or more vaccine doses vs. being vaccine refusing

Multiple binary logistic regression analyses was conducted in order to assess the impact of sociological factors on the likelihood of taking three or more vaccine doses relative to be vaccine refusing.

Respondents who had neutral (OR=7.58, p<0.05), somewhat positive (OR=47.74, p<0.001) and very positive (OR=6146.86, p<0.001) general attitudes towards COVID-19 vaccination relative to very negative attitudes were more likely to take three or more vaccine doses. Respondents who assessed their friends' attitudes as somewhat negative (OR=0.15, p<0.05), neutral (OR=0.14, p<0.05) and very positive (OR=0.06, p<0.05) relative to very negative were less likely to take three or more vaccine doses.

Those who rated National Health Authorities (OR=0.23, p<0.05) and health professionals (OR=0.21, p<0.01) as having the least influence on their decision to vaccinate were significantly less likely to take three or more doses relative to be vaccine refusing. Respondents who rated communication with their HCWs as more responsive were also more likely to take three or more doses (OR=1.59; p<0.05). The model was statistically significant $\chi 2(16) = 330.807$, p<0.001 and explained 46.6% (Nagelkerke R2) of variance in vaccination behaviour.

Table 46. Association between sociological factors and likelihood of taking three or more vaccine doses vs. being vaccine refusing (multivariate binary logistic regression analysis)

Sociological factors		B	S.E.	Wald	Exp (B)	95% C.I		p
Own attitude	Negative (ref)							
	Somewhat negative	1.486	0.939	2.504	4.421	0.701	27.873	0.114
	Neutral	2.025	0.938	4.666	7.577	1.206	47.592	<0.05
	Somewhat positive	3.866	0.962	16.150	47.742	7.246	314.566	<0.001
	Very positive	4.989	1.075	21.558	146.858	17.872	1206.726	<0.001
Friends' attitude	Negative (ref)							
	Somewhat negative	-1.872	0.911	4.223	0.154	0.026	0.917	<0.05
	Neutral	-1.995	0.914	4.760	0.136	0.023	0.816	<0.05
	Somewhat positive	-1.770	0.952	3.460	0.170	0.026	1.100	0.063
	Very positive	-2.845	1.151	6.114	0.058	0.006	0.554	<0.05
Own attitude	(as important influencers)	-0.496	0.416	1.424	0.609	0.270	1.375	0.233
Family	(as important influencers)	0.424	0.285	2.204	1.528	0.873	2.673	0.138
National Health Authorities	(as important influencers)	0.033	0.490	0.005	1.034	0.395	2.703	0.946

Sociological factors		B	S.E.	Wald	Exp (B)	95% C.I		p
Healthcare workers	(as important influencers)	-0.370	0.337	1.206	0.691	0.357	1.337	0.272
Own attitudes	(as unimportant influencer)	-1.603	0.912	3.087	0.201	0.034	1.203	0.079
National Health Authorities	(as unimportant influencer)	-1.461	0.570	6.570	0.232	0.076	0.709	<0.05
Healthcare workers	(as unimportant influencer)	-1.553	0.556	7.805	0.212	0.071	0.629	<0.01
HCWs' recommendations		0.462	0.198	5.439	1.587	1.076	2.340	<0.05

5.6.6 Sociological factors as predictors of COVID-19 vaccination behaviour; predicting likelihood of being completely vaccinated vs. being vaccine refusing

Multiple binary logistic regression analysis was conducted in order to assess the impact of sociological factors on the likelihood of being completely vaccinated relative to be vaccine refusing.

Respondents who had neutral (OR=6.10, p<0.001), somewhat positive (OR=11.40, p<0.001) and very positive (OR=47.26, p<0.001) general attitudes towards COVID-19 vaccination relative to very negative attitudes were more likely to be completely vaccinated. Respondents who assessed their friends' attitudes as somewhat negative (OR=0.15, p<0.05) relative to very negative and community members' attitudes as neutral (OR=0.34, p<0.05), somewhat positive (OR=0.33, p<0.05) and very positive (OR=0.20, p<0.05) relative to very negative were less likely to be completely vaccinated.

Those who included family (OR=1.80, p<0.01), National Health Authorities (OR=2.52, p<0.01), HCWs (OR=2.57, p<0.001) and central public authorities (OR=2.61, p<0.05) in the group of agents having the most influence on their decision whether to get the vaccine, were significantly more likely to be completely vaccinated relative to be vaccine refusing. Respondents who considered their own attitudes as less important when making vaccination decision (OR=0.28, p<0.01) were less likely to be completely vaccinated, as were those who included HCWs in the group of agents having the least influence on their vaccination decision (OR=0.49, p<0.05). The model was statistically significant $\chi^2(26) = 235.164$, $p<0.001$, and explained 39% (Nagelkerke R^2) of variance in vaccination behaviour.

Table 47. Association between sociological factors and likelihood of taking three or more vaccine doses vs. being vaccine refusing (multivariate binary logistic regression analysis)

	Sociological factors	B	S.E.	Wald	Exp (B)	95% C.I		p
Own attitude	Negative (ref)							
	Somewhat negative	0.826	0.429	3.700	2.284	0.984	5.299	0.054
	Neutral	1.808	0.428	17.878	6.101	2.638	14.109	<0.001
	Somewhat positive	2.434	0.464	27.498	11.403	4.591	28.319	<0.001
	Very positive	3.856	0.692	31.085	47.264	12.186	183.315	<0.001
Friends' attitude	Negative (ref)							
	Somewhat negative	-1.123	0.479	5.501	0.325	0.127	0.831	<0.05
	Neutral	-0.617	0.480	1.650	0.539	0.210	1.383	0.199
	Somewhat positive	-0.523	0.537	0.951	0.593	0.207	1.697	0.330
	Very positive	-0.837	0.845	0.980	0.433	0.083	2.270	0.322

	Sociological factors	B	S.E.	Wald	Exp (B)	95% C.I		p
Community members' attitude	Negative (ref)							
	Somewhat negative	-0.544	0.511	1.133	0.580	0.213	1.580	0.287
	Neutral	-1.092	0.512	4.540	0.336	0.123	0.916	<0.05
	Somewhat positive	-1.118	0.563	3.945	0.327	0.109	0.985	<0.05
	Very positive	-1.618	0.746	4.710	0.198	0.046	0.855	<0.05
Health care workers' attitude	Negative (ref)							
	Somewhat negative	-0.347	1.194	0.084	0.707	0.068	7.336	0.771
	Neutral	1.402	0.979	2.049	4.062	0.596	27.689	0.152
	Somewhat positive	0.722	0.945	0.583	2.058	0.323	13.124	0.445
	Very positive	0.215	0.942	0.052	1.240	0.196	7.858	0.820
Own attitude	(as important influencers)	0.047	0.282	0.027	1.048	0.603	1.820	0.869
Family	(as important influencers)	0.589	0.200	8.701	1.803	1.219	2.667	<0.01
National Health Authorities	(as important influencers)	0.926	0.303	9.321	2.523	1.393	4.571	<0.01
Healthcare workers	(as important influencers)	0.945	0.221	18.295	2.574	1.669	3.969	<0.001
Central public Authorities	(as important influencers)	0.958	0.380	6.359	2.607	1.238	5.489	<0.05
Own attitudes	(as unimportant influencer)	-1.273	0.435	8.553	0.280	0.119	0.657	<0.01
Friends	(as unimportant influencer)	-0.066	0.253	0.069	0.936	0.570	1.537	0.793
National Health Authorities	(as unimportant influencer)	-0.453	0.275	2.715	0.636	0.371	1.090	0.099
Healthcare workers	(as unimportant influencer)	-0.710	0.309	5.279	0.492	0.268	0.901	<0.05
HCWs' recommendations		0.142	0.118	1.459	1.153	0.915	1.452	0.227

5.6.7 Environmental factors as predictors of COVID-19 vaccination behaviour; predicting likelihood of taking three or more vaccine doses vs. being vaccine refusing

Multiple binary logistic regression analysis was conducted in order to assess the impact of environmental factors on the likelihood of taking three or more doses of the vaccine relative to be vaccine refusing.

Respondents who reported a higher level of perceived lack of information about COVID-19 vaccines (OR=0.64, p<0.001) were less likely to receive three or more vaccine doses. At the same time, those who relied less on information about COVID-19 vaccination from friends (OR=0.74, p<0.05), more on information from their doctor (OR=1.94, p<0.001) and from international organizations such as WHO, UNICEF, CDC (OR=1.33, p<0.01) were more likely to receive three or more vaccine doses. The model was statistically significant $\chi2(4) = 87.184$, p<0.001, and explained 21.6% (Nagelkerke R2) of variance in vaccination behaviour.

Table 48. Association between environmental factors and likelihood of taking three or more vaccine doses vs. being vaccine refusing (multivariate binary logistic regression analysis)

Environmental factors	B	S.E.	Wald	Exp (B)	95% C.I		P
Perceived lack of information	-0.445	0.119	14.086	0.641	0.508	0.808	<0.001
Friends (frequency of use of the information source)	-0.294	0.116	6.438	0.745	0.594	0.935	<0.05
Your doctor/the doctor you visit most often (frequency of use of the information source)	0.661	0.115	33.222	1.937	1.547	2.425	<0.001
International organizations – WHO, UNICEF, CDC (frequency of use of the information source)	0.286	0.103	7.674	1.331	1.087	1.630	<0.01

5.6.8 Environmental factors as predictors of COVID-19 vaccination behaviour; predicting likelihood of being completely vaccinated vs. being vaccine refusing

Multiple binary logistic regression analysis was conducted in order to assess the impact of environmental factors on the likelihood of being completely vaccinated relative to be vaccine refusing.

Respondents who perceived lower lack of information (OR=0.87, p<0.05), who followed less information on COVID-19 vaccination from their doctor (OR=1.64, p<0.001) and relied less on religious leaders as a source of COVID-19 vaccination related information (OR=0.82, p<0.05) were more likely to be completely vaccinated. The model was statistically significant $\chi 2(4) = 85.807$, p<0.001, and explained 11.9% (Nagelkerke R2) of variance in vaccination behaviour.

Table 49. Association between environmental factors and likelihood of being completely vaccinated vs. being vaccine refusing (multivariate binary logistic regression analysis)

Environmental factors	B	S.E.	Wald	Exp (B)	95% C.I		P
Lack of information	-0.142	0.068	4.415	0.867	0.760	0.990	<0.05
Friends (frequency of use of the information source)	-0.039	0.069	0.321	0.962	0.840	1.101	0.571
Your doctor/the doctor you visit most often (frequency of use of the information source)	0.493	0.065	57.906	1.638	1.442	1.860	<0.001
Religious leaders (frequency of use of the information source)	-0.197	0.080	6.110	0.821	0.703	0.960	<0.05

6. Results of the Research on HCWs

6.1 Description of the sample of HCWs

The majority of HCWs were female (85.5%, n=881), and the mean age was 48.2 years (ranging from 20 to 79 years, SD=12.44). The mean number of years in practice was 24.9 (SD=13.60). Around a half worked in primary healthcare (52.3%, n=540). Of the total number of HCWs, 40.6% (n=419) were physicians and 59.4% (n=612) were nurses. Of the physicians, 36.3% (n=152) were general practitioners.

Table 50. Description of the sample of HCWs

Variables		N	%
Gender	Male	150	14.5%
	Female	881	85.5%
Healthcare level	Primary	540	52.3%
	Secondary	262	25.4%
	Tertiary	229	22.2%
Profession	Physician	419	40.6%
	Nurse	612	59.4%
Specialization	General practitioner	152	36.3%
	Neurologist	25	6.0%
	Paediatrician	21	5.0%
	Oncologist	10	2.4%
	Gynaecologist	15	3.6%
	Endocrinologist	5	1.2%
	Haematologist	4	1.0%
	Pulmonologist	10	2.4%
	Psychiatrist	12	2.9%
	Epidemiologist/infectiologist	36	8.6%
	Emergency medicine specialist	14	3.3%
	Internist	15	3.6%
	Other	100	23.9%
Type of settlement	Urban	837	81.2%
	Rural	194	18.8%
Region	Municipality Chisinau	418	40.5%
	North	251	24.3%
	Center	217	21.0%
	South	143	13.9%
	Transnistria	2	0.2%
Chronic diseases	No	629	61.0%
	Yes	402	39.0%

6.2 Vaccination behaviour in HCWs

Two aspects of HCWs' COVID-19 vaccination behaviour were evaluated - **vaccination behaviour in the professional context** and **private vaccination behaviour**.[24]

In general, HCWs showed a high level of COVID-19 vaccine promotion behaviour (Mean=4.37, SD=0.88).

24 Vaccination behaviour of healthcare workers in professional context refers to the behaviour addressed to their patients, while vaccination behaviour in private context refers to behaviour addressed to themselves.

Among the HCWs, 85.3% (n=880) reported that they often or always comply with the prescribed vaccination for COVID-19, while 5.3% (n=55) reported that they rarely or never comply. Even 80.5% (n=830) HCWs reported that they often or always persuade their patients to receive the COVID-19 vaccine, while 84.7% (n=873) provide additional information about the COVID-19 vaccine if patients are hesitant. Similarly, 79.3% (n=818) often or always advise patients who are eligible to get the COVID-19 vaccine. In general, 83.5% (n=861) of HCWs often or always recommend the COVID-19 vaccine.

Table 51. Descriptions of individual items measuring COVID-19 vaccination behaviour in professional context among the HCWs

Items	Never	Rarely	Sometimes	Often	Always
	N (%)	N (%)	N (%)	N (%)	N (%)
1. Adhering fully to the prescribed vaccination for COVID-19-primary vaccination *(1 or 2 doses depending on the vaccine and a booster dose)*	34 3.3%	21 2.0%	96 9.3%	157 15.2%	723 70.1%
2. Persuading my patients to get the COVID-19 vaccine	46 4.5%	41 4.0%	114 11.1%	196 19.0%	634 61.5%
3. If patients are hesitant, providing additional information on the COVID-19 vaccine	30 2.9%	30 2.9%	98 9.5%	201 19.5%	672 65.2%
4. Advising my patients who are eligible to get the COVID-19 vaccine	57 5.5%	29 2.85	127 12.3%	193 18.7%	625 60.6%
5. In general, I recommend people to get the COVID-19 vaccine.	37 3.6%	31 3.0%	102 9.9%	172 16.7%	689 66.8%

More than half (62.2%, n=641) of the HCWs received three or more doses of COVID-19 vaccine, 33.4% (n=344) were completely vaccinated, while only 0.7% (n=7) were incompletely vaccinated with one dose. Only 3.8% (n=39) were not vaccinated at all.

Table 52. Private COVID-19 vaccination behaviour

Received COVID-19 vaccine doses	N (%)
None	39 (3.8%)
One dose (incomplete)	7 (0.7%)
One or two doses dose (complete)	344 (33.4%)
Three and more doses (booster)	641 (62.2%)

There were statistically significant differences in COVID-19 vaccine promotion behaviour between HCWs with different private vaccination behaviour. HCWs who had not received a single dose of a COVID-19 vaccine were significantly less likely to promote COVID-19 vaccine than those who had received one dose, were completely vaccinated, or received three or more doses (Mean=3.52 vs. Mean=4.26, Mean=4.15, Mean=4.53, respectively; $p<0.001$).

Table 53. Differences in COVID-19 vaccine promotion behaviour between HCWs exhibiting diverse private vaccination behaviour

Private vaccination behaviour	N	Mean	SD	Min	Max	p
Received no COVID-19 vaccine	39	3.52	1.25	1.00	5.00	<0.001
Received one dose of a COVID-19 vaccine	7	4.26	1.07	2.00	5.00	
Completely vaccinated with one or two doses of a COVID-19 vaccine	344	4.15	0.98	1.00	5.00	
Received three or more doses of a COVID-19 vaccine (booster)	641	4.53	0.72	1.00	5.00	

There were no differences in COVID-19 vaccine promotion behaviour with respect to gender and presence of chronic diseases. However, HCWs working at the tertiary healthcare level were less likely to promote COVID-19 vaccination than those working at the primary and secondary levels (Mean=3.94 vs. Mean=4.56, Mean=4.34, respectively; p<0.001). Physicians were significantly more inclined towards COVID-19 vaccination promotion behaviour than nurses (Mean=4.56 vs. Mean=4.30, respectively; p<0.01). Also, general practitioners were more engaged in COVID-19 vaccination promotion behaviour than physicians of other specialties (Mean=4.73 vs. Mean=4.30, respectively; p<0.001). HCWs working in rural areas were more likely to promote the COVID-19 vaccine than their colleagues working in urban areas (Mean=4.52 vs. Mean=4.33, respectively; p<0.01).

Table 54. Differences in COVID-19 vaccine promotion behaviour between diverse groups of HCWs

Socio-demographic characteristics		N	Mean	SD	Min	Max	p
Gender	Male	150	4.36	0.85	1.00	5.00	0.597
	Female	881	4.37	0.88	1.00	5.00	
Healthcare level	Primary	540	4.56	0.70	1.00	5.00	<0.001
	Secondary	262	4.34	0.90	1.00	5.00	
	Tertiary	229	3.94	1.05	1.00	5.00	
Profession	Physician	419	4.56	0.80	1.00	5.00	<0.01
	Nurse	612	4.30	0.92	1.00	5.00	
Specialization	General practitioner	152	4.73	0.57	1.00	5.00	<0.001
	Other	267	4.30	0.87	1.00	5.00	
Chronic diseases	Yes	402	4.41	0.84	1.00	5.00	0.232
	No	629	4.34	0.90	1.00	5.00	
Type of settlement	Urban	837	4.33	0.90	1.00	5.00	<0.01
	Rural	194	4.52	0.78	1.00	5.00	

Older HCWs (r=0.16, p<0.01), with more years of practice (r=0.13, p<0.01) were significantly more likely to promote COVID-19 vaccination.

6.3 Psychological factors

6.3.1 HCWs' perception of COVID-19 vaccines efficacy

In general, HCWs' attitudes towards vaccine efficacy were moderately positive (Mean=3.54, SD=0.75). The majority of HCWs (76.4%, n=788) agreed or strongly agreed with the belief that COVID-19 vaccines are effective. Similarly, 73.1% (n=753) believed that vaccination is the only way to stop the pandemic. At the same time, one third (30.2%, n=311) believed or strongly believed that the COVID-19 epidemic would last as long as it lasted, with or without vaccination, while one half (50.1%, n=517) disagreed or strongly disagreed. More than a third (35.8%, n=369) agreed or strongly agreed that there is not enough evidence to prove that COVID-19 vaccines really protect against the virus, while similar proportion (38.9%, n=401) disagreed or strongly disagreed.

Table 55. Distribution of HCWs' scores on individual items of attitudes towards vaccine efficacy

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
	N (%)	N (%)	N (%)	N (%)	N (%)
C1.1.1 Overall, I think that vaccines against COVID-19 are effective.	28 2.7%	41 4.0%	174 16.9%	435 42.2%	353 34.2%
C1.1.2 Vaccination was the only way to stop the COVID-19 pandemic	30 2.9%	113 11.0%	135 13.1%	444 43.1%	309 30.0%
C1.1.3 In my opinion, the COVID-19 epidemic would last as long as it did, with or without vaccination.	151 14.6%	366 35.5%	203 19.7%	211 20.5%	100 9.7%

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
	N (%)	N (%)	N (%)	N (%)	N (%)
C1.1.4 In my opinion there is not enough evidence that the COVID-19 vaccines really protect against the virus	124 12.0%	277 26.9%	261 25.3%	266 25.8%	103 10.0%

Physicians had a significantly more positive attitudes towards COVID-19 vaccine efficacy than nurses (Mean=3.67 vs. Mean=3.46, respectively; p<0.01). HCWs working at the primary healthcare level had more appreciation for vaccine efficacy than those working at the secondary and tertiary levels (Mean=3.65 vs. Mean=3.48, Mean=3.37, respectively; p<0.001). No differences were observed between HCWs in terms of gender, specialization, presence of chronic diseases or type of settlement.

Table 56. Differences in perception of COVID-19 vaccine efficacy between diverse groups of HCWs

Socio-demographic characteristics		N	Mean	SD	Min	Max	p
Gender	Male	150	3.62	0.74	1.00	5.00	0.074
	Female	881	3.53	0.75	1.00	5.00	
Healthcare level	Primary	540	3.65	0.73	1.00	5.00	<0.001
	Secondary	262	3.48	0.81	1.00	5.00	
	Tertiary	229	3.37	0.68	1.00	5.00	
Profession	Physician	419	3.67	0.77	1.00	5.00	<0.001
	Nurse	612	3.46	0.73	1.00	5.00	
Specialization	General practitioner	152	3.73	0.78	1.00	5.00	0.182
	Other	267	3.63	0.77	1.00	5.00	
Chronic diseases	Yes	402	3.50	0.79	1.00	5.00	0.204
	No	629	3.57	0.73	1.00	5.00	
Type of settlement	Urban	837	3.55	0.76	1.00	5.00	0.686
	Rural	194	3.53	0.73	1.00	5.00	

Age (r=0.03, p>0.05) and years (r=0.01, p>0.05) of practice were not significantly correlated with belief in COVID-19 vaccine efficacy.

6.3.2 HCWs' perception of COVID-19 vaccines safety

Overall, HCWs' attitudes towards vaccine safety were moderately positive (Mean=3.53, SD=0.86). Around a third of HCWs (64.7%, n=667) agreed or strongly agreed that COVID-19 vaccines are safe. Furthermore, 70.0% (n=722) of HCWs strongly disagreed or disagreed with the opinion that it is safer to get COVID-19 than to be vaccinated against it, while 13.4% (n=138) agreed or strongly agreed with this. Around a half (53.1%, n=547) of HCWs disagreed or strongly disagreed with the opinion that COVID-19 vaccines contain substances that may be harmful to human health, while 20.7% (n=213) supported this belief. While the speed with which COVID-19 vaccines were produced did not made 39.6% (n=409) of HCWs to doubt their safety, 36.9% (n=361) had such concerns.

Table 57. Distribution of HCWs' scores on individual items of attitudes towards COVID-19 vaccine safety

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
Items	N (%)	N (%)	N (%)	N (%)	N (%)
C1.2.1 In general, I think that vaccines against COVID-19 are safe.	32 3.1%	89 8.6%	243 23.6%	426 41.3%	241 23.4%
C1.2.2 I think that it is safer to get COVID-19 than to get vaccinated against it.	304 29.5%	418 40.5%	171 16.6%	96 9.3%	42 4.1%

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
Items	N (%)	N (%)	N (%)	N (%)	N (%)
C1.2.3 I am quite sure that vaccines against COVID-19 contain substances that can harm human health	202 19.6%	345 33.5%	271 26.3%	165 16.0%	48 4.7%
C1.2.4 The speed with which the COVID-19 vaccines were produced made me question their safety	159 15.4%	250 24.2%	241 23.4%	291 28.2%	90 8.7%

Male HCWs were significantly more confident in the safety of COVID-19 vaccines than females (Mean=3.74 vs. Mean=3.49, respectively p<0.01). HCWs working at the primary healthcare level had significantly more positive attitudes towards vaccine safety than those working at the secondary and tertiary levels (Mean=3.68 vs. Mean=3.42, mean=3.31, respectively; p<0.001). Physicians were more confident in COVID-19 vaccine safety than nurses (Mean=3.75 vs. Mean=3.38, respectively, p<0.001), as well as general practitioners compared to physicians with other specialties (Mean=3.86 vs. Mean=3.68, respectively; p<0.05). There were no significant differences in the perceived safety of COVID-19 with regard to the presence of chronic diseases and the type of settlement.

Table 58. Differences in perception of COVID-19 vaccine safety between diverse groups of HCWs

Socio-demographic characteristics		N	Mean	SD	Min	Max	p
Gender	Male	150	3.74	0.78	1.00	5.00	<0.01
	Female	881	3.49	0.87	1.00	5.00	
Healthcare level	Primary	540	3.68	0.84	1.00	5.00	<0.001
	Secondary	262	3.42	0.90	1.25	5.00	
	Tertiary	229	3.31	0.78	1.00	5.00	
Profession	Physician	419	3.75	0.83	1.00	5.00	<0.001
	Nurse	612	3.38	0.85	1.00	5.00	
Specialization	General practitioner	152	3.86	0.76	1.50	5.00	<0.05
	Other	267	3.68	0.85	1.00	5.00	
Chronic diseases	Yes	402	3.46	0.89	1.00	5.00	0.073
	No	629	3.57	0.83	1.00	5.00	
Type of settlement	Urban	837	3.53	0.86	1.00	5.00	0.899
	Rural	194	3.54	0.87	1.00	5.00	

Age (r=-0.01, p>0.05) and years of practice (r=-0.03, p>0.05) did not correlate with attitudes about the safety of COVID-19 vaccines.

6.3.3 HCWs' perception of danger of disease

Overall, HCWs perceived the danger of COVID-19 to be moderately high (Mean=3.65, SD=0.98).

Around two thirds of HCWs (63.1%, n=650) disagreed or strongly disagreed that the danger of COVID-19 is exaggerated, while 20.8% (n=214) agreed or strongly agreed. Similarly, 68.7% (n=708) disagreed or strongly disagreed with the opinion that COVID-19 does not cause more severe symptoms than seasonal flu, while 20.5% (n=212) agreed or strongly agreed. Even 73.6% (n=752) of HCWs considered themselves to be at high risk of contracting COVID-19, while 17% (n=175) did not think they were at risk.

Table 59. Distribution of HCWs' scores on individual items of perception of danger of disease

Items	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
	N (%)	N (%)	N (%)	N (%)	N (%)
C1.3.1 I think that the danger of COVID-19 is overstated	239 23.2%	411 39.9%	167 16.2%	165 16.0%	49 4.8%
C1.3.2 I am sure that COVID-19 does not give more severe symptoms than seasonal flu	273 26.5%	435 42.2%	111 10.8%	160 15.5%	52 5.0%
C1.3.3 I consider myself as being at low risk of contracting COVID-19*	48 4.7%	127 12.3%	97 9.4%	369 35.8%	390 37.8%

**Due to low reliability, this item was excluded from the total score calculation*

HCWs working at the primary health care level considered the danger of COVID-19 to be much higher than HCWs working at the secondary and tertiary levels (Mean=3.74 vs. Mean=3.63, Mean=3.46, respectively, p<0.001). Physicians also perceived COVID-19 to be more dangerous than nurses (Mean=3.79 vs. Mean=3.56, respectively, p<0.001). No differences in the perception of the danger of COVID-19 diseases were observed with regard to gender, specialisation, presence of chronic diseases and type of settlement.

Table 60. Differences in perception of danger of COVID-19 disease between diverse groups of HCWs

Socio-demographic characteristics		N	Mean	SD	Min	Max	p
Gender	Male	150	3.74	1.00	1.00	5.00	0.185
	Female	881	3.64	0.98	1.00	5.00	
Healthcare level	Primary	540	3.74	0.98	1.00	5.00	<0.001
	Secondary	262	3.63	0.98	1.00	5.00	
	Tertiary	229	3.46	0.97	1.00	5.00	
Profession	Physician	419	3.79	1.01	1.00	5.00	<0.001
	Nurse	612	3.56	0.96	1.00	5.00	
Specialization	General practitioner	152	3.78	1.04	1.00	5.00	0.966
	Other	267	3.79	0.99	1.00	5.00	
Chronic diseases	Yes	402	3.63	1.00	1.00	5.00	0.646
	No	629	3.67	0.97	1.00	5.00	
Type of settlement	Urban	837	3.64	0.99	1.00	5.00	0.348
	Rural	194	3.72	0.95	1.00	5.00	

Age (r=0.04, p>0.05) and years of practice (r=0.04, p>0.05) did not correlate with the attitude towards the danger of COVID-19 disease.

6.3.4 HCWs' trust in societal factors

HCWs showed a moderately high level of trust in societal factors (Mean=3.67, SD=0.78). Overall, 71.1% (n=732) of the HCWs fully trusted the recommendations of the Ministry of Health regarding the vaccination against COVID-19, while 18.9% (n=195) were unsure. Somewhat smaller proportion of HCWs trusted official data on the quality and frequency of adverse reactions to COVID-19 vaccines (64%, n=659). Furthermore, 22.3% (n=230) agreed or strongly agreed with the opinion that pharmaceutical companies cover up the dangers of vaccines, while 45.8% (n=473) disagreed. Nearly a fifth HCWs (18.3%, n=210) supported or strongly supported the view that profit is the main motive for scientists developing vaccine, while 51.2% (n=528) disagreed or strongly disagreed. While 75.7% of HCWs (n=780) believed that central public authorities had the best intentions when promoting vaccination against COVID-19, 18.2% (n=188) were unsure.

Table 61. Distribution of HCWs' scores on individual items of trust in societal factors

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
Items	N (%)	N (%)	N (%)	N (%)	N (%)
C4.1.1 I am fully confident in the recommendations given by the Health Authorities regarding the vaccination against COVID-19	37 3.6%	66 6.4%	195 18.9%	438 42.5%	295 28.6%
G4.1.2 I believe that the official data on the type and frequency of adverse reactions to vaccines against COVID-19 are true/ trustworthy	29 2.8%	100 9.7%	243 23.6%	444 43.1%	215 20.9%
C4.1.3 I think that pharmaceutical companies cover up the dangers of COVID-19 vaccines	154 14.9%	319 30.9%	328 31.8%	183 17.7%	47 4.6%
C4.1.4 I think that the principal motive for scientists who participate in the creation of vaccines against COVID-19 is profit	185 17.9%	343 33.3%	293 28.4%	155 15.0%	55 5.3%
C4.1.5 I believe that central public authorities (government, parliament and president), when they encourage vaccination against COVID-19, do so with the best of intentions.	17 1.6%	46 4.5%	188 18.2%	438 42.5%	342 33.2%

HCWs working at the tertiary healthcare level manifested significantly lower level of societal trust than those working at the primary and secondary levels (Mean=3.43 vs. Mean=3.79, Mean=3.62, respectively; $p<0.001$). Physicians reported significantly higher level of trust in societal factors, compared to nurses (Mean=4.79 vs. Mean=3.58, respectively; $p<0.001$). Also, HCWs who reported having no chronic diseases had significantly higher level of social trust than those with chronic diseases (Mean=3.72 vs. Mean=3.58, respectively $p<0.01$). There were no significant differences in manifested level of societal trust with respect to gender, specialization and type of settlement.

Table 62. Differences in trust in societal factors between diverse groups of HCWs.

Socio-demographic characteristics		N	Mean	SD	Min	Max	p
Gender	Male	150	3.78	0.76	1.00	5.00	0.073
	Female	881	3.65	0.78	1.00	5.00	
Healthcare level	Primary	540	3.79	0.75	1.00	5.00	<0.001
	Secondary	262	3.62	0.79	1.00	5.00	
	Tertiary	229	3.43	0.76	1.00	5.00	
Profession	Physician	419	3.79	0.79	1.00	5.00	<0.001
	Nurse	612	3.58	0.75	1.00	5.00	
Specialization	General practitioner	152	3.88	0.76	1.00	5.00	0.062
	Other	267	3.73	0.81	1.00	5.00	
Chronic diseases	Yes	402	3.58	0.76	1.00	5.00	<0.01
	No	629	3.72	0.78	1.00	5.00	
Type of settlement	Urban	837	3.65	0.79	1.00	5.00	0.117
	Rural	194	3.74	0.68	1.00	5.00	

Age ($r=0.06$, $p>0.05$) and years spent in practice ($r=0.04$, $p>0.05$) were not significantly correlated with the level of manifested societal trust.

6.3.5 HCWs' trust regarding information sources

For most HCWs (72.7%, n=750), National Health Authorities (Ministry of Health and National Agency for Public Health) were the source of highest credibility regarding vaccines, followed by continuing medical education (CME) on vaccines (72.2%, n=745), international organizations - WHO, UNICEF, CDC (71.1%, n=733), national scientific and professional conferences (70.1%, n=723), publications and guidelines from relevant national institutions and organizations (70.1%, n=723), international scientific and professional conferences (67.8%, n=699), publications and guidelines of relevant international organizations (65.5%, n=675), national (65.6%, n=676) and international (65.2%, n=672) scientific literature. Colleagues were rated somewhat less trustworthy, with 47.6% (n=491) of HCWs reporting that colleagues were very or completely trustworthy. The least trusted source for HCWs were social networks and public media, with 16% (n=165) and 21.5% (n=222) of HCWs respectively considering these sources to be very or completely trustworthy.

Table 63. Score distribution of HCWs' trust in information sources

	Not at all trustworthy	Slightly trustworthy	Moderately trustworthy	Very trustworthy	Completely trustworthy
Source of information	N (%)	N (%)	N (%)	N (%)	N (%)
C4.2.1 Continuing Medical Education (CME) on vaccines	19 1.8%	48 4.7%	219 21.2%	324 31.4%	421 40.8%
C4.2.2 National scientific and professional conferences	17 1.6%	66 6.4%	225 21.8%	334 32.4%	389 37.7%
C4.2.3 International scientific and professional conferences	49 4.8%	65 6.3%	218 21.1%	338 32.8%	361 35.0%
C4.2.4 National scientific literature	17 1.6%	79 7.7%	259 25.1%	329 31.9%	347 33.7%
C4.2.5 International scientific literature	49 4.8%	77 7.5%	233 22.6%	323 31.3%	349 33.9%
C4.2.6 Publications and guidelines of relevant national institutions and organizations	14 1.4%	64 6.2%	230 22.3%	366 35.5%	357 34.6%
C4.2.7 Publications and guidelines of relevant international organizations	49 4.8%	75 7.3%	232 22.5%	342 33.2%	333 32.3%
C4.2.8 Public media	189 18.3%	241 23.4%	379 36.8%	138 13.4%	84 8.1%
C4.2.9 Colleagues	32 3.1%	111 10.8%	397 38.5%	319 30.9%	172 16.7%
C4.2.10 Social networks	335 32.5%	223 21.6%	308 29.9%	101 9.8%	64 6.2%
C4.2.11 National Health Authorities (Ministry of Health, National Agency for Public Health)	24 2.3%	56 5.4%	201 19.5%	323 31.3%	427 41.4%
C4.2.12 International organizations (WHO, UNICEF, CDC)	60 5.8%	66 6.4%	172 16.7%	304 29.5%	429 41.6%

Physicians placed more trust than nurses in information obtained at CME (Mean=4.17 vs. Mean=3.96 respectively $p<0.01$), national scientific conferences (Mean=4.16, vs. Mean=3.86; respectively $p<0.001$), international scientific conferences (Mean=4.19, vs. Mean=3.65; respectively; $p<0.001$), national scientific literature (Mean=4.06, vs. Mean=3.76; respectively $p<0.001$), international scientific literature (Mean=4.16, vs. Mean=3.59; respectively $p<0.001$), publications and guidelines of relevant national institutions and organizations (Mean=4.11, vs. Mean=3.85; respectively $p<0.001$), publications and guidelines of relevant international organizations (Mean=4.09, vs. Mean=3.62; respectively $p<0.001$), National Health Authorities (Mean=4.12, vs. Mean=3.99; respectively $p<0.05$) and international organizations – WHO, UNICEF, CDC (Mean=4.21, vs. Mean=3.85; respectively $p<0.001$). On the other hand, nurses had more confidence in public media (Mean=2.60 vs. Mean=2.76, respectively; $p<0.05$), and social networks (Mean=2.25 vs. Mean=2.43, respectively; $p<0.05$) than physicians.

Table 64. Differences in trust in diverse information sources regarding vaccines among HCWs holding different positions

Source	Position	N	Mean	SD	Min	Max	p
C4.2.1 Continuing Medical Education (CME) on vaccines	Physician	419	4.17	0.88	1.00	5.00	<0.01
	Nurse	612	3.96	1.04	1.00	5.00	
C4.2.2 National scientific and professional conferences	Physician	419	4.16	0.89	1.00	5.00	<0.001
	Nurse	612	3.86	1.05	1.00	5.00	
C4.2.3 International scientific and professional conferences	Physician	419	4.19	0.91	1.00	5.00	<0.001
	Nurse	612	3.65	1.18	1.00	5.00	
C4.2.4 National scientific literature	Physician	419	4.06	0.91	1.00	5.00	<0.001
	Nurse	612	3.76	1.06	1.00	5.00	
C4.2.5 International scientific literature	Physician	419	4.16	0.92	1.00	5.00	<0.001
	Nurse	612	3.59	1.19	1.00	5.00	
C4.2.6 Publications and guidelines of relevant national institutions and organizations	Physician	419	4.11	0.89	1.00	5.00	<0.001
	Nurse	612	3.85	1.00	2.00	5.00	
C4.2.7 Publications and guidelines of relevant international organizations	Physician	419	4.09	0.96	3.00	5.00	<0.001
	Nurse	612	3.62	1.16	1.00	5.00	
C4.2.8 Public media	Physician	419	2.60	1.12	1.00	5.00	<0.05
	Nurse	612	2.76	1.17	1.00	5.00	
C4.2.9 Colleagues	Physician	419	3.46	0.98	2.00	5.00	0.848
	Nurse	612	3.48	1.00	1.00	5.00	
C4.2.10 Social networks	Physician	419	2.25	1.15	1.00	5.00	<0.05
	Nurse	612	2.43	1.23	1.00	5.00	
C4.2.11 National Health Authorities (Ministry of Health, National Agency for Public Health)	Physician	419	4.12	0.99	1.00	5.00	<0.05
	Nurse	612	3.99	1.03	1.00	5.00	
C4.2.12 International organizations (WHO, UNICEF, CDC)	Physician	419	4.21	0.95	2.00	5.00	<0.001
	Nurse	612	3.85	1.16	1.00	5.00	

6.3.6 HCWs' COVID-19-related conspiracy beliefs

Overall, HCWs showed a moderately low level of susceptibility to conspiracy beliefs related to COVID-19 (Mean=2.27; SD=0.81). Only 3.2% (n=33) of HCWs believed and strongly believed that COVID-19 was a hoax, while 10.8% (n=111) felt uncertain about their position. More than a third of them (36.4%, n=375) believed or strongly believed that the coronavirus was manmade, while 32.4% (n=334) neither agreed nor disagreed. Around a quarter of HCWs (23%, n=237) agreed or strongly agreed that the spread of coronavirus was a deliberate attempt to reduce the global population, while 28% (n=289) were uncertain. In addition, 16.6% (n=171) agreed and strongly agreed that the spread of coronavirus was a deliberate attempt by governments to gain political control, while 54.7% (n=564) disagreed or strongly disagreed with this claim. Nearly a fifth (19.3%, n=199) of HCWs agreed or strongly agreed that Big Pharma created COVID-19 to profit from vaccines, while 56% (n=578) disagreed or strongly disagreed. Only 4.1% (n=42) of HCWs supported the opinion that COVID-19 was caused by 5G and was a form of radiation poisoning transmitted by radio waves, while 19.5% (n=201) neither agreed nor disagreed. While 5.8% (n=59) agreed or strongly agreed with the statement that the COVID-19 vaccine will be used for mass sterilisation, 17.6% (n=181) were uncertain.

Table 65. Distribution of HCWs' scores on individual COVID-19-related conspiracy beliefs items

Items	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
	N (%)	N (%)	N (%)	N (%)	N (%)
C1.4.1 I think that COVID-19 is a hoax.	469 45.5%	418 40.5%	111 10.8%	24 2.3%	9 0.9%
C1.4.2 I believe that coronavirus is manmade (made in laboratory).	144 14.0%	178 17.3%	334 32.4%	262 25.4%	113 11.0%
C1.4.3 In my opinion the spread of the corona virus is a deliberate attempt to reduce the size of the global population.	231 22.4%	274 26.6%	289 28.0%	181 17.6%	56 5.4%
C1.4.4 As I see it, the spread of the corona virus is a deliberate attempt by governments to gain political control.	263 25.5%	301 29.2%	296 28.7%	131 12.7%	40 3.9%
C1.4.5 I consider that Big Pharma created COVID-19 to profit from the vaccines.	262 25.4%	316 30.6%	254 24.6%	138 13.4%	61 5.9%
C1.4.6 I believe that COVID-19 is caused by 5G and that it is a form of radiation poisoning transmitted through radio waves.	440 42.7%	348 33.8%	201 19.5%	31 3.0%	11 1.1%
C1.4.7 I think that the COVID-19 vaccine will be used to carry out mass sterilization.	410 39.8%	381 37.0%	181 17.6%	44 4.3%	15 1.5%

Female HCWs were more prone to believe in conspiracy theories than male HCWs (Mean=2.31 vs. Mean=2.04, respectively; p<0.001). HCWs working at the primary healthcare level were less likely to believe in conspiracy theories than HCWs working at the secondary and tertiary level (Mean=2.19 vs. Mean=2.34, Mean=2.41, respectively; p<0.001). Furthermore, physicians were less inclined to conspiracy beliefs than nurses (Mean=2.06 vs. Mean=2.42, respectively; p<0.001). HCWs with chronic diseases believed in conspiracy theories to a greater extent than those without chronic diseases (Mean=2.39 vs. Mean=2.20, respectively; p<0.001). Tendency to believe in conspiracies was not associated with specialization and type of settlement.

Table 66. Differences in COVID-19-related conspiracy beliefs between diverse groups of HCWs

Socio-demographic characteristics		N	Mean	SD	Min	Max	p
Gender	Male	150	2.04	0.74	1.00	4.57	<0.001
	Female	881	2.31	0.82	1.00	5.00	
Healthcare level	Primary	540	2.19	0.80	1.00	5.00	<0.001
	Secondary	262	2.34	0.84	1.00	4.71	
	Tertiary	229	2.41	0.78	1.00	5.00	
Profession	Physician	419	2.06	0.81	1.00	5.00	<0.001
	Nurse	612	2.42	0.78	1.00	5.00	
Specialization	General practitioner	152	2.29	0.76	1.00	3.43	0.115
	Other	267	2.00	0.81	1.00	3.00	
Chronic diseases	Yes	402	2.39	0.82	1.00	5.00	<0.001
	No	629	2.20	0.80	1.00	5.00	
Type of settlement	Urban	837	2.27	0.82	1.00	5.00	0.831
	Rural	194	2.26	0.77	1.00	4.71	

There was no association between conspiracy beliefs and HCWs' age (r=0.04, p>0.05) and years of practice (r=0.06, p>0.05).

6.3.7 HCWs' beliefs related to perceived responsibility

While in general 71.2% (n=734) of all HCWs agreed and strongly agreed that they felt responsible for their patients' decisions regarding COVID-19 vaccination, larger percentage of physicians (74%, n=310) than nurses (69.3%, n=424) agreed so. Only 10.7% (n=45) of physicians and 15.7% (n=98) of nurses denied feeling responsible for patients' decisions regarding COVID-19 vaccination.

Table 67. Description of perceived responsibility related to patients' COVID-19 vaccination decisions in physicians and nurses

		Physicians	Nurses	Total	p
Item		N (%)	N (%)	N (%)	
C2.1.1 I feel responsible for the decisions regarding vaccination against COVID-19 made by my patients	Strongly disagree	13 3.1%	24 3.9%	37 3.6%	<0.05
	Disagree	32 7.6%	72 11.8%	104 10.1%	
	Neither disagree nor agree	64 15.3%	92 15.0%	156 15.1%	
	Agree	180 43.0%	260 42.5%	440 42.7%	
	Strongly agree	130 31.0%	164 26.8%	294 28.5%	

In general, 82.5% (n=851) of all HCWs agreed and strongly agreed that it was their duty to advise patients to be vaccinated against COVID-19. However, smaller proportion of physicians (66.6%, n=363) than nurses (79.8%, n=388) agreed so (p<0.001).

Table 68. Description of perceived responsibility related to patients advising in physicians and nurses

		Physicians	Nurses	Total	p
Item		N (%)	N (%)	N (%)	
C2.1.2 It is my duty to advise patients to get vaccinated against COVID-19.	Strongly disagree	10 2.4%	18 2.9%	28 2.7%	<0.001
	Disagree	11 2.6%	43 7.0%	54 5.2%	
	Neither disagree nor agree	35 8.4%	63 10.3%	98 9.5%	
	Agree	179 42.7%	277 45.3%	456 44.2%	
	Strongly agree	184 43.9%	211 34.5%	395 38.3%	

6.3.8 HCWs' advocacy for vaccination

HCWs demonstrated moderately high level of motivation towards advocacy for vaccination (Mean=3.84, SD=0.65). A large number (72.8%, n=751) of HCWs strongly agreed or agreed that vaccination is an important topic they want to discuss with other people, while 11.4% (n=118) disagreed or strongly disagreed with this opinion. While 68.1% (n=703) of HCWs strongly agreed or agreed that it is important that they mention the topic of vaccination to others, 13.5% (n=139) disagreed or strongly disagreed. More than three quarters (78.1%, n=806) of HCWs supported or strongly supported the opinion that it is important that they talk openly about vaccination with other people. Furthermore, 64.9% (n=671) HCWs believed or strongly believed that when they talked openly about vaccination it had a positive impact on people's beliefs on vaccination, whereas even 25.7% (n=265) were uncertain about that. More than half of the HCWs (68.7%, n=708) were convinced that if they discuss vaccination, it will very much change others' views on this topic, while 20.7% (n=213) were

unsure if this was true. Similarly, 70.4% (n=725) of HCWs strongly agreed or agreed that people's opinions about vaccination can be influenced by the conversations they have with them, and 19.4% (n=200) expressed uncertainty about this belief.

Three quarters (75.2%, n=775) of the HCWs were strongly confident or confident in their own capacity to answer the questions that others might ask them about vaccination, while 17.3% (n=178) reported uncertainty in this regard. Similar percentage of HCWs (76.3%, n=787) claimed that they knew exactly how to talk to others about vaccination and that they felt able to discuss vaccination (79.7%, n=821), while 17% (n=175), and 13.7% (n=141) respectively, expressed uncertainty about their skills. Even 80% (n=824) of HCWs believed and strongly believed that they were the ones who decide whether to have conversations on vaccination with others, while 14.2% (n=146) were not sure. Similarly, 76.3% (n=787) of them agreed and strongly agreed that discussing vaccination is entirely their choice, while 15.9% (n=164) felt uncertain.

Table 69. Distribution of HCWs' scores on individual items of Motivation for advocacy for vaccination

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
Items	N (%)	N (%)	N (%)	N (%)	N (%)
C2.3.1 Vaccination is an important topic I want to discuss with others	24 2.3%	94 9.1%	162 15.7%	532 51.6%	219 21.2%
C2.3.2 It is important that I mention the topic of vaccination to others	32 3.1%	107 10.4%	189 18.3%	516 50.0%	187 18.1%
C2.3.3 It matters that I talk openly about vaccination with other people	17 1.6%	79 7.7%	129 12.5%	583 56.5%	223 21.6%
C2.3.4 When I talk openly about vaccination, it has a positive impact on people's beliefs on vaccination	18 1.7%	77 7.5%	265 25.7%	490 47.5%	181 17.6%
C2.3.5 If I discuss vaccination, it will very much change others' views on this topic	18 1.7%	92 8.9%	213 20.7%	534 51.8%	174 16.9%
C2.3.6 People's opinions of vaccination can really be influenced by the conversations I have with them	15 1.5%	91 8.8%	200 19.4%	544 52.8%	181 17.6%
C2.3.7 I am confident I can answer questions that others might ask me about vaccination	11 1.1%	67 6.5%	178 17.3%	560 54.3%	215 20.9%
C2.3.8 I know exactly how to talk about vaccination with others	10 1.0%	59 5.7%	175 17.0%	559 54.2%	228 22.1%
C2.3.9 I feel able to discuss vaccination	11 1.1%	58 5.6%	141 13.7%	580 56.3%	241 23.4%
C2.3.10 I decide whether to have conversations on vaccination with others	9 0.9%	52 5.0%	146 14.2%	578 56.1%	246 23.9%
C2.3.11 Discussing vaccination with others is entirely my choice	14 1.4%	67 6.5%	164 15.9%	515 50.0%	271 26.3%

Male HCWs had significantly higher motivation to advocate for vaccination than female HCWs (Mean=3.98 vs. Mean=3.81, respectively; $p<0.01$). Compared to HCWs at secondary (Mean=3.73) and tertiary (Mean=3.61) level, those working at primary health care (Mean=3.99) had significantly higher motivation for advocacy for vaccination ($p<0.001$). Physicians had higher motivation to advocate for vaccination, than nurses (Mean=3.94 vs. Mean=3.77, respectively, $p<0.001$), as did general practitioners compared to physicians with other specialties (Mean=4.09 vs. Mean=3.86, respectively, $p<0.001$), and HCWs from rural areas compared to those from urban areas (Mean=3.92 vs. Mean=3.82, respectively, $p<0.05$). There were no significant differences in motivation for advocacy among HCWs with respect to the presence/absence of chronic diseases.

Table 70. Differences in motivation towards advocacy for vaccination between diverse groups of HCWs

Socio-demographic characteristics		N	Mean	SD	Min	Max	P
Gender	Male	150	3.98	0.59	2.00	5.00	<0.01
	Female	881	3.81	0.66	1.00	5.00	
Healthcare level	Primary	540	3.99	0.60	1.00	5.00	<0.001
	Secondary	262	3.73	0.67	1.73	5.00	
	Tertiary	229	3.61	0.65	1.27	5.00	
Profession	Physician	419	3.94	0.60	1.00	5.00	<0.001
	Nurse	612	3.77	0.68	1.27	5.00	
Specialization	General practitioner	152	4.09	0.58	1.00	5.00	<0.001
	Other	267	3.86	0.59	2.00	5.00	
Chronic diseases	Yes	402	3.84	0.65	1.00	5.00	0.613
	No	629	3.84	0.65	1.27	5.00	
Type of settlement	Urban	837	3.82	0.65	1.00	5.00	<0.05
	Rural	194	3.92	0.66	1.00	5.00	

Older HCWs (r=0.10, p<0.01), and those with more years of practice (r=0.07, p<0.05) had higher motivation for advocacy for vaccination.

6.4 Sociological factors

6.4.1 HCWs' descriptive norms regarding COVID-19 vaccination – impact on general attitudes towards COVID-19 vaccination

The majority of HCWs had positive general attitudes towards COVID-19 vaccination (75.6%, n=780). The largest proportion believed that National Health Authorities (89.7%, n=925), central public authorities (80.7%, n=832), their colleagues (73.8%, n=761), local public authorities (72.1%, n=743) and members of their family (69.7%, n=718) had positive attitudes towards COVID-19 vaccination. Somewhat smaller proportion of HCWs believed that their friends (50.6%, n=522) and people from the community/neighbourhood (33.5%, n=346) supported COVID-19 vaccination. The smallest proportion of HCWs believed that religious leaders (14.2%, n=147) had a positive attitude towards COVID-19 vaccination, with even 15.6% (n=161) of HCWs not knowing the attitude of their religious leader.

Table 71. Distribution of HCWs' perception of descriptive norms – general attitudes towards COVID-19 vaccination

Attitudes	Very negative	Somewhat negative	Neutral	Somewhat positive	Very positive	Do not know
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
C3.1.1 Own attitudes	21 2.0%	39 3.8%	188 18.2%	421 40.8%	359 34.8%	3 0.3%
C3.1.2 Family's attitudes	30 2.9%	58 5.6%	224 21.7%	436 42.3%	282 27.4%	1 0.1%
C3.1.3 Friends' attitudes	26 2.5%	103 10.0%	359 34.8%	355 34.4%	167 16.2%	21 2.0%
C3.1.4 Local public authorities' attitudes	4 0.4%	20 1.9%	167 16.2%	410 39.8%	333 32.3%	97 9.4%
C3.1.5 National Health Authorities' (Ministry of Health, National Agency for Public Health) attitudes	2 0.2%	7 0.7%	56 5.4%	266 25.8%	659 63.9%	41 4.0%
C3.1.6 People's from community/ neighbourhood attitudes	25 2.4%	123 11.9%	482 46.8%	260 25.2%	86 8.3%	55 5.3%
C3.1.7 Religious leaders' attitudes	166 16.1%	210 20.4%	347 33.7%	92 8.9%	55 5.3%	161 15.6%

Attitudes	Very negative	Somewhat negative	Neutral	Somewhat positive	Very positive	Do not know
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
C3.1.8 Colleagues' attitudes	9 0.9%	40 3.9%	199 19.3%	455 44.1%	306 29.7%	22 2.1%
C3.1.9 Central public authorities' (government, parliament and president) attitudes	5 0.5%	10 1.0%	99 9.6%	313 30.4%	519 50.3%	85 8.2%

Physicians had more positive general attitudes towards COVID-19 vaccination than nurses (Mean=4.22 vs. Mean=3.90, p<0.001). Similarly, physicians were more likely than nurses to believe that their family members (Mean=4.06 vs. Mean=3.72, p<0.001), friends (Mean=3.68 vs. Mean=3.43, p<0.001), people from the community/neighbourhood (Mean=3.37 vs. Mean=3.20, p<0.001) and colleagues (Mean=4.09 vs. Mean=3.93, p<0.001) supported COVID-19 vaccination. No differences were observed between physicians and nurses with respect to their assessment of local public authorities', National Health Authorities', religious leaders' and central public authorities' general attitudes towards COVID-19 vaccination.

Table 72. Differences in perceptions of COVID-19 vaccination-related descriptive norms (general attitudes regarding vaccination against COVID-19) among HCWs holding different positions

Attitudes	Position	N	Mean	SD	Min	Max	P
C3.1.1 Own attitudes	Physician	418	4.22	0.88	1.00	5.00	<0.001
	Nurse	610	3.90	0.94	1.00	5.00	
C3.1.2 Family's attitudes	Physician	419	4.06	0.93	1.00	5.00	<0.001
	Nurse	611	3.72	0.99	1.00	5.00	
C3.1.3 Friends' attitudes	Physician	410	3.68	0.93	1.00	5.00	<0.001
	Nurse	600	3.43	0.98	1.00	5.00	
C3.1.4 Local public authorities' attitudes	Physician	389	4.15	0.80	1.00	5.00	0.336
	Nurse	545	4.10	0.81	1.00	5.00	
C3.1.5 National Health Authorities' (Ministry of Health, National Agency for Public Health) attitudes	Physician	409	4.61	0.67	1.00	5.00	0.227
	Nurse	581	4.57	0.64	1.00	5.00	
C3.1.6 People from the community/ neighbourhood attitudes	Physician	394	3.37	0.89	1.00	5.00	<0.001
	Nurse	582	3.20	0.87	1.00	5.00	
C3.1.7 Religious leaders' attitudes	Physician	355	2.64	1.10	1.00	5.00	0.516
	Nurse	515	2.59	1.10	1.00	5.00	
C3.1.8 Colleagues' attitudes	Physician	411	4.09	0.83	1.00	5.00	<0.01
	Nurse	598	3.93	0.87	1.00	5.00	
C3.1.9 Central public authorities' (government, parliament and president) attitudes	Physician	397	4.43	0.75	2.00	5.00	0.432
	Nurse	549	4.39	0.77	1.00	5.00	

6.4.2 HCWs' descriptive norms regarding COVID-19 vaccination – impact on importance of getting vaccinated

The majority of HCWs believed it was important to be vaccinated against COVID-19 (80.5%, n=830). The largest proportion believed that national health authorities (89.2%, n=191), central public authorities (83.9%, n=865), local public authorities (77.9%, n=803), colleagues (77.9%, n=803), family members (77.5%, n=799), friends (64.7%, n=667) and people from the community/neighbours (60.5%, n=625) considered it moderately or extremely important for them to be vaccinated against COVID-19.

The smallest proportion of HCWs (24.5%, n=252) were of the opinion that religious leaders thought that getting vaccinated against COVID-19 was important, while even 15.2% (n=157) did not know the attitude of their religious leader towards the importance of COVID-19 vaccination.

Table 73. Distribution of HCWs' perception of descriptive norms – importance of getting vaccinated against COVID-19

Attitudes	Not at all important	Low importance	Neutral	Moderately important	Extremely important	Do not know
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
C3.2.1 Own attitudes	38 3.7%	55 5.3%	102 9.9%	257 24.9%	573 55.6%	6 0.6%
C3.2.2 Family's attitudes	48 4.7%	54 5.2%	125 12.1%	278 27.0%	521 50.5%	5 0.5%
C3.2.3 Friends' attitudes	42 4.1%	59 5.7%	231 22.4%	318 30.8%	349 33.9%	32 3.1%
C3.2.4 Local public authorities' attitudes	7 0.7%	16 1.6%	116 11.3%	282 27.4%	521 50.5%	89 8.6%
C3.2.5 National Health Authorities' (Ministry of Health, National Agency for Public Health) attitudes	4 0.4%	5 0.5%	55 5.3%	136 13.2%	784 76.0%	47 4.6%
C3.2.6 People's from community/neighbourhood attitudes	20 1.9%	47 4.6%	279 27.1%	293 28.4%	331 32.1%	61 5.9%
C3.2.7 Religious leaders' attitudes	162 15.7%	164 15.9%	296 28.7%	104 10.1%	148 14.4%	157 15.2%
C3.2.8 Colleagues' attitudes	19 1.8%	25 2.4%	157 15.2%	293 28.4%	510 49.5%	27 2.6%
C3.2.9 Central public authorities' (government, parliament and president) attitudes	9 0.9%	6 0.6%	76 7.4%	179 17.4%	686 66.5%	75 7.3%

Physicians were more likely than nurses to appreciate the importance of getting vaccinated against COVID-19 (Mean=4.44 vs. Mean=4.11, $p<0.001$). Physicians were also more likely than nurses to believe that their family members (Mean=4.38 vs. Mean 3.98, $p<0.01$), friends (Mean=4.09 vs. Mean=3.73, $p<0.001$), people from the community/neighbours (Mean=4.02 vs. Mean=3.81, $p<0.05$), and colleagues (Mean=4.34 vs. Mean=4.18, $p<0.05$) thought it was important for them to be vaccinated against COVID-19. No differences were observed between physicians and nurses in their perception of the beliefs of the local public authorities, national health authorities, religious leaders and central public authorities regarding the importance of being vaccinated against COVID-19.

Table 74. Differences in perceptions of COVID-19 vaccination-related descriptive norms (importance of getting vaccinated against COVID-19) among HCWs holding different positions

Attitudes	Position	N	Mean	SD	Min	Max	p
C3.2.1 Own attitudes	Physician	417	4.44	0.95	1.00	5.00	<0.001
	Nurse	608	4.11	1.13	1.00	5.00	
C.3.2.2 Family's attitudes	Physician	418	4.38	0.97	1.00	5.00	<0.001
	Nurse	608	3.98	1.18	1.00	5.00	
C3.2.3 Friends' attitudes	Physician	402	4.09	0.99	1.00	5.00	<0.001
	Nurse	597	3.73	1.12	1.00	5.00	
C3.2.4 Local public authorities' attitudes	Physician	394	4.38	0.83	1.00	5.00	0.784
	Nurse	548	4.37	0.81	1.00	5.00	
3.2.5 Attitudes of National health authorities' (Ministry of Health, National Agency for Public Health)	Physician	401	4.74	0.62	1.00	5.00	0.355
	Nurse	583	4.70	0.63	1.00	5.00	

Attitudes	Position	N	Mean	SD	Min	Max	p
C3.2.6 Attitudes of people from the community/neighbourhood	Physician	389	4.02	0.98	1.00	5.00	<0.05
	Nurse	581	3.81	1.01	1.00	5.00	
C3.2.7 Attitudes of religious leaders	Physician	352	2.99	1.33	1.00	5.00	0.086
	Nurse	522	2.84	1.29	1.00	5.00	
C3.2.8 Colleagues' attitudes	Physician	405	4.34	0.90	1.00	5.00	<0.05
	Nurse	599	4.18	0.96	1.00	5.00	
C3.2.9 Attitudes of central public authorities' (government, parliament and president)	Physician	395	4.60	0.77	1.00	5.00	0.619
	Nurse	561	4.60	0.72	1.00	5.00	

6.4.3 HCWs' injunctive norms regarding COVID-19 vaccination

The greatest influence on COVID-19 vaccination intentions was attributed to personal attitudes towards vaccination (among the top three influencing factors for 83.6%, n=862). For a smaller proportion, National Health Authorities (47.8%, n=493), colleagues (44.6%, n=460), and family (37.9%, n=391) had the strongest influence on their COVID-19 vaccination intention. Religious leaders were the least influential factors on COVID-19 vaccination intention for the largest proportion of HCWs (57%, n=588). People from the community (41.2%, n=425) and media (41.2%, n=425) were also considered by respondents to have the least influence on COVID-19 vaccination intention.

Table 75. Biggest and smallest self-ranked influence on COVID-19 vaccination intention (N=251)

Potential Influence	Biggest self-reported influence			Smallest self-reported influence		
	1st rank	2st rank	3rd rank	1st rank	2st rank	3rd rank
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Own attitudes	733 71.1%	65 6.3%	64 6.2%	40 3.9%	5 0.5%	3 0.3%
Family	33 3.2%	295 28.6%	63 6.1%	61 5.9%	26 2.5%	18 1.7%
Friends	3 0.3%	33 3.2%	110 10.7%	106 10.3%	63 6.1%	62 6.0%
Local public authorities	20 1.9%	48 4.7%	31 3.0%	67 6.5%	38 3.7%	61 5.9%
National Health Authorities (Ministry of Health, National Agency for Public Health)	139 13.5%	199 19.3%	155 15.0%	15 1.5%	26 2.5%	12 1.2%
Community members/ neighbours	5 0.5%	5 0.5%	11 1.1%	150 14.5%	174 16.9%	101 9.8%
Religious leaders	3 0.3%	9 0.9%	9 0.9%	356 34.5%	160 15.5%	72 7.0%
Colleagues	80 7.8%	162 15.7%	218 21.1%	21 2.0%	35 3.4%	14 1.4%
Central public authorities (government, parliament, president)	9 0.9%	27 2.6%	45 4.4%	38 3.7%	76 7.4%	56 5.4%
Media (TV, radio, newspapers, internet)	6 0.6%	22 2.1%	41 4.0%	177 17.2%	129 12.5%	119 11.5%

6.5 Environmental factors

6.5.1 HCWs' perception of lack of information

Overall, the HCWs did not report significant lack of competence in answering patients' questions about COVID-19 vaccines (Mean=2.24, SD=0.90). A minority of HCWs did not feel competent to answer patients' questions about the effectiveness of COVID-19 vaccines (8.1%, n=83), and similar proportions did not feel competent to answer patients' questions about the quality (11.8%, n=122) and safety (10.5%, n=109) of COVID-19 vaccines. However, larger proportions of HCWs felt uncertain about their competence to answer their patients' questions about COVID-19 vaccine efficacy (19.5%, n=205), quality (30.0%, n=309) and safety (27.5%, n=284).

Table 76. Distribution of HCWs' scores on individual items of perception of lack of information

Items	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
	N (%)	N (%)	N (%)	N (%)	N (%)
C2.2.1 I feel completely competent when answering patients' questions about the effectiveness of COVID-19 vaccines	15 1.5%	68 6.6%	205 19.9%	467 45.3%	276 26.8%
C2.2.2 I feel completely competent when answering patients' questions about the quality of COVID-19 vaccines	22 2.1%	100 9.7%	309 30.0%	377 36.6%	223 21.6%
C2.2.3 I feel completely competent when answering patients' questions about the safety of COVID-19 vaccines	24 2.3%	85 8.2%	284 27.5%	403 39.1%	235 22.8%

HCWs working at the primary healthcare level reported lower lack of information when answering patients' questions about COVID-19 vaccines than HCWs working at the secondary and tertiary level (Mean=2.06 vs. Mean=2.38, Mean=2.51, respectively; p<0.001). Nurses reported a greater lack of information when answering patients' questions about COVID-19 vaccines than physicians (Mean=2.20 vs. Mean 2.16, respectively; p<0.05). Compared to general practitioners, HCWs with other specialties perceived a greater lack of information to answer patients' questions (Mean=2.01 vs. Mean=2.25, respectively; p<0.01). There were no differences in perceived lack of information among HCWs according to gender, presence/absence of chronic diseases and type of settlement.

Table 77. Differences in perception of lack of information between diverse groups of HCWs

	Socio-demographic characteristics	N	Mean	SD	Min	Max	p
Gender	Male	150	2.23	0.86	1.00	5.00	0.995
	Female	881	2.24	0.91	1.00	5.00	
Healthcare level	Primary	540	2.06	0.86	1.00	5.00	<0.001
	Secondary	262	2.38	0.93	1.00	5.00	
	Tertiary	229	2.51	0.87	1.00	5.00	
Profession	Physician	419	2.16	0.88	1.00	5.00	<0.05
	Nurse	612	2.30	0.91	1.00	5.00	
Specialization	General practitioner	152	2.01	0.87	1.00	5.00	<0.01
	Other	267	2.25	0.87	1.00	5.00	
Chronic diseases	Yes	402	2.27	0.91	1.00	5.00	0.645
	No	629	2.23	0.90	1.00	5.00	
Type of settlement	Urban	837	2.25	0.91	1.00	5.00	0.573
	Rural	194	2.22	0.87	1.00	5.00	

Younger HCWs perceived a greater lack of information when answering patients' questions about COVID-19 vaccines (r=-0.07, p<0.05), although the association was weak. Perceived lack of information was not significantly associated with years spent in practice (r=-0.04, p>0.05).

6.5.2 HCWs' use of information sources

The most frequently (often or regularly) used sources of vaccine-related information by HCWs were National Health Authorities - Ministry of Health, National Agency for Public Health (77.5%, n=799), CME (75.2%, n=775), international organizations – WHO, UNICEF, CDC (71.1%, n=733), publications and guidelines from relevant national institutions and organizations (67.5%, n=696), national scientific and professional conferences (65.6%, n=676) and national scientific literature (62.8%, n=648). These were followed by publications and guidelines from relevant international organizations (59.2%, n=612), international scientific literature (53.3%, n=549), international scientific and professional conferences (52.9%, n=546), and colleagues (52.8%, n=544). The least used sources were social networks (21.1%, n=218) and public media (25.3%, n=261).

Table 78. Score distribution of HCWs' use of different information sources

Source of information	Never	Rarely	Sometimes	Often	Regularly
	N (%)	N (%)	N (%)	N (%)	N (%)
C5.1 Continuing Medical Education (CME) on vaccines	36 3.5%	55 5.3%	165 16.0%	278 27.0%	497 48.2%
C5.2 National scientific and professional conferences	41 4.0%	93 9.0%	221 21.4%	297 28.8%	379 36.8%
C5.3 International scientific and professional conferences	133 12.9%	116 11.3%	236 22.9%	257 24.9%	289 28.0%
C5.4 National scientific literature	39 3.8%	110 10.7%	234 22.7%	319 30.9%	329 31.9%
C5.5 International scientific literature	94 9.1%	119 11.5%	269 26.1%	281 27.3%	268 26.0%
C5.6 Publications and guidelines of relevant national institutions and organizations	24 2.3%	89 8.6%	22 21.5%	308 29.9%	388 37.6%
C5.7 Publications and guidelines of relevant international organizations	80 7.8%	105 10.2%	236 22.9%	296 28.7%	314 30.5%
C5.8 Public media	207 20.1%	250 24.2%	313 30.4%	165 16.0%	96 9.3%
C5.9 Colleagues	41 4.0%	132 12.8%	314 30.5%	339 32.9%	205 19.9%
C5.10 Social networks	312 30.3%	220 21.3%	281 27.3%	124 12.0%	94 9.1%
C5.11 National Health Authorities (Ministry of Health, National Agency for Public Health)	18 1.7%	58 5.6%	156 15.1%	313 30.4%	486 47.1%
C5.12 International organizations (WHO, UNICEF, CDC)	60 5.8%	66 6.4%	172 16.7%	304 29.5%	429 41.6%

6.5.3 HCWs' perception of support from the system

Overall, HCWs perceived system support for COVID-19 immunization to be very high (Mean=4.20, SD=0.68). A large majority of HCWs agreed and strongly agreed that there are clear official written guidelines for the implementing good practice for COVID-19 immunization (85.2%, n=885). Even larger proportion of HCWs agreed and strongly agreed that national health authorities encourage doctors to recommend COVID-19 vaccination (90.4%, n=932). In addition, 86.9% (n=896) of HCWs reported that they had received sufficient training on the use of official guidelines for COVID-19 immunization, while 83.6% (n=862) reported that they had received sufficient training on how to communicate with patients about COVID-19 vaccination. A slightly smaller percentage of HCWs reported receiving sufficient training on how to deal with vaccine hesitancy (79.1%, n=816).

Table 79. Distribution of HCWs' scores on individual items of support from the system

Items	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
	N (%)	N (%)	N (%)	N (%)	N (%)
C6.1 There are clear official written guidelines/clinical guidelines/ protocols for the implementation of good practices regarding COVID-19 vaccination.	6 0.6%	16 1.6%	124 12.0%	476 46.2%	409 39.7%
C6.2 National health authorities are encouraging doctors to recommend COVID-19 vaccination	9 0.9%	13 1.3%	77 7.5%	471 45.7%	461 44.7%
C6.3 I received sufficient training regarding the application of official guidelines for COVID-19 vaccination	17 1.6%	22 2.1%	96 9.3%	488 47.3%	408 39.6%
C6.4 I received sufficient training on how to communicate with patients about COVID-19 immunization	16 1.6%	28 2.7%	125 12.1%	459 44.5%	403 39.1%
C6.5 I have sufficient training on how to address vaccine hesitancy	19 1.8%	37 3.6%	159 15.4%	465 45.1%	351 34.0%

HCWs working at the tertiary healthcare level perceived support from the system regarding COVID-19 vaccination to be significantly lower than those working at the primary and secondary level (Mean=3.88 vs. Mean=4.33, Mean=4.20, respectively; p<0.001). General practitioners perceived the system support to be higher, compared to physicians with other specialties (Mean=4.40 vs. Mean=4.06 respectively; p<0.001). HCWs from rural areas perceived system support to be higher than HCWs from urban areas (Mean=4.33 vs. Mean=4.17, respectively; p<0.01). There were no significant differences in perceived system support according to gender, profession, and presence/absence of chronic diseases.

Table 80. Differences in perception of system support between diverse groups of HCWs

Socio-demographic characteristics		N	Mean	SD	Min	Max	P
Gender	Male	150	4.21	0.72	2.20	5.00	0.610
	Female	881	4.19	0.67	1.00	5.00	
Healthcare level	Primary	540	4.33	0.62	1.00	5.00	<0.001
	Secondary	262	4.20	0.69	1.80	5.00	
	Tertiary	229	3.88	0.70	1.00	5.00	
Profession	Physician	419	4.19	0.71	1.00	5.00	0.947
	Nurse	612	4.21	0.65	1.00	5.00	
Specialization	General practitioner	152	4.40	0.62	1.80	5.00	<0.001
	Other	267	4.06	0.73	1.00	5.00	
Chronic diseases	Yes	402	4.23	0.64	2.00	5.00	0.315
	No	629	4.18	0.70	1.00	5.00	
Type of settlement	Urban	837	4.17	0.69	1.00	5.00	<0.01
	Rural	194	4.33	0.61	2.20	5.00	

Older HCWs (r=0.16, p<0.01), and those with more years of practice (r=0.16, p<0.01) perceived support from the system regarding COVID-19 vaccination as significantly higher.

6.6 Relationships between behaviour drivers and vaccination behaviour among HCWs

6.6.1 Socio-demographic characteristics and vaccination behaviour in HCWs

Linear regression analysis was used to determine whether socio-demographic characteristics predicted HCWs' vaccination promotion behaviour.

Vaccination promotion behaviour was more prominent among HCWs at the primary healthcare level (vs. tertiary level, β=-0.20, p<0.01), and among general practitioners (vs. other specialties, β=-0.18, p<0.01). The model was statistically significant (F(6, 412)=8,772, p<0.001), and explained 11.3% (R^2) of variance in vaccination behaviour.

Table 81. Multiple linear regression analysis assessing the association of socio-demographic characteristics and COVID-19 vaccine promotion behaviour

Socio-demographic characteristics		B	SE	Beta	95% CI		P
(Constant)		5.137	0.381		4.387	5.886	<0.001
Age		-0.003	0.010	-0.047	-0.023	0.017	0.789
Years of practice		0.005	0.010	0.091	-0.014	0.024	0.600
Healthcare level	Primary (ref)						
	Secondary	0.050	0.100	0.026	-0.148	0.247	0.622
	Tertiary	-0.385	0.112	-0.203	-0.605	-0.164	<0.01
Specialization	General practitioner (ref)						
	Other	-0.303	0.095	-0.181	-0.489	-0.117	<0.01
Type of settlement	Urban (ref)						
	Rural	-0.075	0.113	-0.032	-0.298	0.147	0.505

6.6.2 Psychological factors as predictors of vaccination behaviour

Multivariate linear regression analysis was conducted to assess the association between psychological factors and vaccine promotion behaviour.

HCWs who had more positive attitudes towards the efficacy of the COVID-19 vaccine (β=0.13, p<0.001), who placed more trust in vaccine-related information received from publications and guidelines of relevant national organizations (β=0.08, p<0.05) and information provided by National Health Authorities (Ministry of Health and National Agency for Public Health) (β=0.09, p<0.01), who had a greater sense of duty to advise patients to get vaccinated (β=0.29, p<0.001), who placed higher value on advocacy for vaccination (β=0.07, p<0.05), and who felt more competent to advocate for vaccination (β=0.12, p<0.01), were more likely to engage in vaccine promotion behaviours. The model was statistically significant (F(13, 1017)=64.558, p<0.001) and explained 44.5% (R2) of the variance in vaccination behaviour.

Table 82. Evaluation of the association between psychological factors and COVID-19 vaccine promotion behaviour in HCWs

Psychological factors	B	SE	Beta	95%C.I.		p
(Constant)	0.989	0.251		0.496	1.482	<0.001
Perceived vaccine efficacy	0.155	0.040	0.133	0.076	0.234	<0.001
Perceived vaccine safety	0.053	0.041	0.051	-0.027	0.132	0.198
Perceived danger of disease	-0.039	0.025	-0.043	-0.087	0.010	0.117
Trust in societal factors	-0.017	0.048	-0.015	-0.111	0.077	0.726
C4.2.6 Trust in information sources - publications and guidelines of relevant national organizations	0.075	0.031	0.083	0.014	0.136	<0.05
C4.2.11 Trust in information sources - National Health Authorities (Ministry of Health, National Agency for Public Health)	0.082	0.030	0.095	0.023	0.141	<0.01
Conspiracy beliefs	0.023	0.039	0.021	-0.053	0.099	0.554
C2.1.1 Perceived responsibility: I feel responsible for the decisions regarding vaccination against COVID-19 made by my patients	0.046	0.024	0.056	-0.001	0.093	0.054
C2.2.2 Perceived responsibility: is my duty to advise patients to get vaccinated against COVID-19	0.266	0.030	0.292	0.208	0.325	<0.001

Psychological factors	B	SE	Beta	95%C.I.		p
Advocacy for vaccination – Value	0.074	0.038	0.072	0.000	0.147	0.050
Advocacy for vaccination – Impact	0.084	0.041	0.075	0.004	0.164	<0.05
Advocacy for vaccination – Competence	0.131	0.038	0.117	0.056	0.207	<0.01
Advocacy for vaccination – Autonomy	-0.053	0.030	-0.047	-0.112	0.006	0.080

6.6.3 Sociological factors as predictors of vaccination behaviour

Multiple linear regression model was conducted to assess the impact of sociological factors on COVID-19 vaccine promotion behaviour.

HCWs whose own general attitudes towards COVID-19 vaccination were very positive (vs. very negative, β=-0.65, p<0.001), somewhat positive (vs. very negative, β=0.59, p<0.001) and neutral (vs. very negative, β=0.28, p<0.05), who assessed religious leaders' general attitudes toward COVID-19 vaccination as very negative (vs. somewhat positive, β=-0.10, p<0.01, neutral β=-0.10, p<0.05, and somewhat negative, β=-0.11, p<0.01) were more likely to engage in vaccine promotion behaviour. Also, HCWs who believed that COVID-19 vaccination was extremely important (vs. those who believed it was not at all important, β=0.39, p<0.01), moderately important (vs. those who believed it was not at all important, β=0.24, p<0.01) and neutral (vs. those who believed it was not at all important, β=0.17, p<0.05), and those who believed their colleagues thought COVID-19 vaccination was of great importance (vs. those who believed colleagues believed it was not at all important, β=-0.28, p<0.05) were more likely to promote COVID-19 vaccination. HCWs who included National Health Authorities (Ministry of Health and National Agency for Public Health) in the group of agents having the largest influence on their decision to get vaccinated against COVID-19, were more likely to promote COVID-19 vaccination (β=0.09, p<0.01). The model was statistically significant ($F(27, 820)=14.548$, $p < 0.001$), and explained 30.2% (R^2) of variance in vaccination promotion behaviour.

Table 83. Evaluation of the impact of sociological factors on COVID-19 vaccine promotion behaviour in HCWs

	Sociological factors	B	SE	Beta	95% C.I		p
Constant		2.421	0.263		1.906	2.937	<0.001
Own attitude (general)	Very negative (Ref)						
	Somewhat negative	0.295	0.247	0.061	-0.190	0.779	0.233
	Neutral	0.614	0.243	0.284	0.136	1.092	<0.05
	Somewhat positive	0.998	0.252	0.591	0.502	1.493	<0.001
	Very positive	1.120	0.255	0.648	0.619	1.622	<0.001
Community members' attitude (general)	Negative (Ref)						
	Somewhat negative	-0.003	0.192	-0.001	-0.381	0.374	0.986
	Neutral	0.155	0.190	0.093	-0.218	0.528	0.416
	Somewhat positive	0.164	0.197	0.087	-0.223	0.551	0.407
	Very positive	0.163	0.216	0.056	-0.261	0.587	0.451
Religious leaders' attitude (general)	Negative (Ref)						
	Somewhat negative	-0.215	0.078	-0.110	-0.368	-0.061	<0.01
	Neutral	-0.165	0.072	-0.097	-0.306	-0.024	<0.05
	Somewhat positive	-0.290	0.101	-0.109	-0.489	-0.092	<0.01
	Very positive	-0.145	0.136	-0.042	-0.411	0.121	0.285
Own attitude (importance)	Not at all important (Ref)						
	Low importance	0.243	0.197	0.063	-0.143	0.628	0.218
	Neutral	0.496	0.197	0.175	0.109	0.883	<0.05
	Moderately important	0.455	0.196	0.236	0.071	0.839	<0.01
	Extremely important	0.659	0.202	0.393	0.262	1.056	<0.01

	Sociological factors	B	SE	Beta	95% C.I		p
Colleagues' attitude (importance)	Not at all important (Ref)						
	Low importance	0.281	0.258	0.050	-0.226	0.788	0.277
	Neutral	0.290	0.211	0.129	-0.125	0.704	0.171
	Moderately important	0.373	0.220	0.202	-0.058	0.803	0.090
	Extremely important	0.471	0.223	0.284	0.033	0.909	<0.05
Own opinion	(as important influencer)	0.071	0.078	0.031	-0.082	0.224	0.363
Family	(as important influencer)	0.009	0.055	0.005	-0.098	0.117	0.867
National Health Authorities (Ministry of Health and National Agency for Public Health)	(as important influencer)	0.153	0.052	0.092	0.050	0.256	<0.01
Colleagues	(as important influencers)	-0.027	0.051	-0.016	-0.128	0.073	0.595
Own opinion	(as unimportant influencer)	0.008	0.152	0.002	-0.290	0.306	0.958
Family	(as unimportant influencer)	-0.047	0.090	-0.017	-0.224	0.130	0.599
Colleagues	(as unimportant influencer)	-0.081	0.099	-0.025	-0.275	0.113	0.413

6.6.4 Environmental factors as predictors of vaccination behaviour

Multiple linear regression model was conducted to assess the impact of environmental factors on COVID-19 vaccine promotion behaviour of HCWs.

HCWs who perceived lack of information as lower (β=-0.26, p<0.001), who perceived system support as higher (β=0.21, p<0.001), who relied on vaccine-related information from publications and guidelines from relevant national institutions and organizations (β=0.10, p<0.01), from National Health Authorities (β=0.11, p<0.05) and from international organizations -WHO, UNICEF, CDC (β=0.10, p<0.01) more often, and relied on information from social networks less frequently (β=-0.08, p<0.01), were more likely to engage in COVID-19 vaccine promotion behaviours. The model was statistically significant (F(7, 1023)=42.469, p < 0.001) and explained 37% (R2) of the variance in vaccination behaviour.

Table 84. Evaluation of the impact of environmental factors on COVID-19 vaccine promotion behaviour in HCWs

Environmental factors	B	SE	Beta	95% C.I		p
Constant	2.806	0.205		2.404	3.208	<0.001
Lack of information	-0.254	0.028	-0.261	-0.310	-0.198	<0.001
Support from the system	0.270	0.041	0.209	0.189	0.351	<0.001
C5.1 Use of information sources - CME on vaccines	0.029	0.028	0.035	-0.027	0.084	0.309
C5.6 Use of information sources - Publications and guidelines of relevant national institutions and organizations	0.080	0.030	0.098	0.022	0.139	<0.01
C5.10 Use of information sources – Social networks	-0.056	0.017	-0.082	-0.090	-0.022	<0.01
C5.11 Use of information sources – National Health Authorities (Ministry of Health, National Agency for Public Health)	0.097	0.038	0.109	0.022	0.172	<0.05
C5.12 Use of information sources – International organizations (WHO, UNICEF, CDC)	0.076	0.026	0.101	0.024	0.128	<0.01

7. Conclusions

This section presents the conclusions based on the collective expert judgement of the team and the interpretation of evidence as presented in the findings. The conclusions have been organized following the theoretical framework (see section 2) and around the same drivers as the findings and are used to establish the case for the recommendations.

7.1 Drivers of general population COVID-19 vaccination related behaviour

7.1.1 Vaccination behaviour

Vaccination behaviour was evaluated by a single item assessing COVID-19 vaccination status, with five responses: 1) Not vaccinated, 2) One dose (incomplete), 3) One dose (complete) 4) Two doses (complete), and 5) Three and more doses.

- Around half of the respondents (49.5%) reported that they had not been vaccinated against COVID-19, one quarter (25.6%) were completely vaccinated with two doses, 11.9% were completely vaccinated with one dose, while 3.1% were incompletely vaccinated with one dose. Only 9.9% received three or more doses of a COVID-19 vaccine (booster).
- Older respondents, those with a graduate and postgraduate education and those full-time employed were more likely to receive three doses of the COVID-19 vaccine relative to be vaccine refusing. Respondents living in the South were less likely to receive three doses relative to those living in Chisinau. Also, respondents with graduate and postgraduate education, part-time employed, full-time employed and self-employed, those who reported to have very good income and those who reported their general health status as average (relative to very good) were more likely to be completely vaccinated relative to be vaccine refusing. Respondents living in the North were less likely to be completely vaccinated than those living in Chisinau.
- More than half of the unvaccinated and under-vaccinated (57.5%) said they would not consider being vaccinated against COVID-19, while a third (29.9%) agreed or strongly agreed that they would be vaccinated. In fact, 84% of them would get a COVID-19 booster later if it became necessary.

7.1.2 Psychological drivers

Psychological drivers included perceived vaccine efficacy, perceived vaccine safety, perceived danger of vaccine-preventable diseases, trust in societal factors (political and health authorities, pharmaceutical companies, scientists and healthcare providers), trust in information sources, perceived collective responsibility, personal experience, thinking styles and COVID-19-related conspiracy beliefs.

- In general, respondents had moderately negative attitudes towards the efficacy and safety of the COVID-19 vaccine. Around a third of the respondents (34.6%) agreed or strongly agreed that vaccines against COVID 19 are effective, while more than half (58.4%) shared the opinion that there is not enough evidence to show that COVID-19 vaccines really protect against the infection. While the majority of participants (74.8%) thought that vaccines against COVID-19 were generally safe, a third (35.8%) thought that it was safer to be exposed to COVID-19 than to be vaccinated against it.
- The danger of COVID-19 disease and the likelihood of infection were considered as moderately low. More than a half of the respondents thought that the risk of COVID-19 was overstated (56.4%), while 46.2% were sure that COVID-19 would not cause more severe symptoms than seasonal flu, and 44.3% considered themselves to be at low risk of contracting COVID-19.
- Respondents demonstrated moderately low level of trust in societal factors related to vaccination against COVID-19. They had the most trust in political authorities. The least trust was placed in pharmaceutical companies.
- The most trusted sources of vaccine-related information were family members (37.7%) and their doctor (35.7%, n=359), followed by health professionals in media (25%). The least trust was placed in information from sources such as regional TV channels (5.2%), religious leaders

(6.1%), national TV channels (7.5%), internet portals (8.5%) and YouTube channels (8.5%).

- About half of the respondents (55.2%) reported that they were concerned that, if they got sick with COVID-19, they could pass it on to others who could get a very severe form of the disease. A third of them (34%) believed that it was important that everyone get vaccinated against COVID-19 in order to achieve collective/herd immunity. About half of the unvaccinated respondents 53.4% thought it was not necessary for them to be vaccinated as enough people would be vaccinated against COVID-19 anyway.
- Even one fifth of vaccinated respondents (20%) reported experiencing a serious adverse reaction after receiving the COVID-19 vaccine, while 41.9% of all respondents reported personally knowing someone who had experienced a serious adverse reaction after receiving the COVID-19 vaccine. Personally knowing someone who had experienced serious adverse reaction after vaccination was reported by 46.4% of vaccine refusing, 40.6% of incompletely vaccinated, 38.2% of completely vaccinated and 33.3% of those who took three or more doses.
- Respondents showed a moderately high tendency to believe in conspiracy theories related to COVID-19 vaccination. Even a third (34.2%) agreed or strongly agreed that COVID-19 is a hoax, 69.6% believed that the coronavirus was man-made, 62.0% supported the opinion that the spread of the coronavirus was a deliberate attempt to reduce the global population, 59.0% believed that "Big Pharma" created COVID-19 to profit from the vaccines.
- In general, there were no statistically significant differences in the preference for rational thinking between respondents with different vaccination behaviours. However, those who took three or more doses were less inclined towards intuitive thinking (Mean=17.20) compared to vaccine refusing (Mean=18.27), incompletely vaccinated (Mean=19.14) and completely vaccinated (Mean=18.19) ($p<0.05$). Respondents with stronger preferences for the rational thinking style were more trusting of vaccine-related information from internet portals and friends and were less trusting of family and religious leaders. Respondents with a stronger preference for the intuitive thinking style were more likely to believe in conspiracies, trust information provided by family and central public authorities, and less likely to trust scientific literature and friends.
- Respondents who had received three or more doses and those completely vaccinated had more positive attitudes towards vaccine efficacy and safety, perceived COVID-19 as more dangerous and the likelihood of infection as higher, and manifested higher level of societal trust. People who refused vaccination were more likely to believe in conspiracy theories.
- Female respondents perceived the danger of COVID-19 disease and the likelihood of infection as significantly higher than males.
- Older respondents (65 and over) had more favourable attitudes towards vaccine efficacy and perceived the danger of COVID-19 disease and the likelihood of infection to be higher, while young people (18-34) were less likely to believe in conspiracy theories.
- People with graduate and postgraduate education had more positive attitudes towards COVID-19 vaccine efficacy and safety, perceived the danger of COVID-19 disease and the likelihood of infection to be higher, had significantly higher level of trust in societal factors and were less likely to believe in conspiracy theories.
- People living in the central part of the country had less favourable attitudes towards the efficacy and safety of the COVID-19 vaccine and demonstrated lower level of societal trust. People living in Chisinau and northern part of the country perceived the danger of COVID-19 and the likelihood of infection as higher than those living in central and southern parts of the country. People living in Chisinau were less likely to believe in conspiracies.
- People living in urban areas perceived the danger of COVID-19 and the likelihood of infection as higher relative to those living in rural areas, demonstrated lower level of trust in societal factors related to COVID-19 and were less likely to believe in conspiracies.
- People with chronic disease perceived the vaccine to be more effective than those without chronic disease, perceived the danger of COVID-19 and the likelihood of infection as higher and had a higher level of societal trust.

7.1.3 Sociological drivers

- One third of respondents assessed their own attitudes towards vaccination against COVID-19 as positive or somewhat positive (33.4%), while 43.2% had very negative or somewhat negative attitudes. The largest proportion believed that healthcare providers (80.4%), National Health Authorities (79.6%), central public authorities, including government, parliament and president (77.2%), and local public authorities (60.1%) had positive attitudes towards COVID-19 vaccination. Smaller percentage perceived that family members (33.3%) were supportive of COVID-19 vaccination, while the smallest proportion believed that that their friends (24.7%), community people (21.7%) and religious leaders (14.8%) had positive attitudes towards COVID-19 vaccination.
- For 73.7% of respondents, personal attitudes towards vaccination against COVID-19 were among the strongest determinants of their intention to be vaccinated. The most influential social agents were family members (ranked among the top three most influential factors by 42.1% of respondents) and healthcare providers (ranked among the most influential factors by 36.2% of respondents). The least influence on vaccination intention was ascribed to religious leaders (ranked among the top three least influential factors by 41.9%), media (35.3%) and community members (27.5%).
- Respondents reported a moderately high quality of communication with their HCWs about COVID-19 vaccination. While 68.6% of respondents stated that their doctor recommended them to get the vaccine against COVID-19, still, 15.5% had no such experience. About a half of respondents trusted the recommendations of their doctor regarding the COVID-19 vaccine (47%) and reported that the doctor answered all of their questions about the COVID-19 vaccine and listened to all of their concerns (59.9%).
- While only 11% of vaccine refusing respondents had positive attitudes towards COVID-19 vaccination, 33.7% of incompletely vaccinated, 51% of completely vaccinated and 72.9% of those who had received three or more doses agreed so. That their family members supported COVID-19 vaccination was believed by 13.4% of vaccine refusing, 43.7% of incompletely vaccinated, 49.1% of completely vaccinated and 69% of those who had received three or more doses.
- Respondents who received three or more doses, were completely or incompletely vaccinated were more likely to report a better quality of communication with their doctor regarding COVID-19 vaccination compared to those who refused the vaccine.
- Respondents aged 50-64 and over 65 years, living in the southern part of Moldova, and those having chronic diseases rated the quality of communication with their doctor about COVID-19 vaccination as higher.

7.1.4 Environmental drivers

Environmental drivers included perceived lack of information (perceived insufficient or inadequate information about COVID-19 vaccines), communication environment (frequency of use of information sources) and structural barriers (the degree to which vaccination services are delivered at a time and place and in cultural context that is convenient).

- Respondents did not perceive considerable lack of COVID-19 vaccine related information.
- Around a third of respondents indicated that a lack of information about COVID-19 vaccines made it difficult for them to decide whether to vaccinate against COVID-19 (33.7%), and that incomplete (39.3%) and conflicting (42.3%) information about COVID-19 vaccines they encountered confused them. On the other hand, 55.9% said they had absolutely all the information they needed about the COVID-19 vaccine/vaccination.
- Respondents who refused the vaccine and those who were incompletely vaccinated were significantly more likely to perceive a lack of information than those who were vaccinated.
- Females and respondents living in urban areas perceived a greater lack of information about COVID-19 vaccines, while those living in central parts of Moldova perceived a lower lack of information than those living in Chisinau, North and South.

- The most frequently (often and regularly) used sources of information about COVID-19 vaccination were family members (44.9%) and physicians (37.6%), followed by friends (33.1%), social networks (24.4%), internet portals (24.3%), and health care professionals in the media (24.1%). The least used sources of information about COVID-19 vaccination were religious leaders (6.1%), and scientific literature (7.9%).
- Although on average, respondents reported very low structural barriers to vaccination, incompletely vaccinated participants perceived higher structural barriers. They were more likely to report that they did not know where and how to get the COVID-19 vaccine, that there was no vaccination centre or opportunity to get the COVID-19 vaccine nearby, and that they could not get the COVID-19 vaccine they wanted.
- Structural barriers were perceived as higher by female respondents, those living in urban areas, and those living in Chisinau.

7.1.5 Drivers significantly associated with COVID-19 vaccine behaviour in general population

Psychological drivers that significantly predicted the likelihood of receiving three or more doses of the COVID-19 vaccine relative to being vaccine refusing were perception of vaccine safety and collective responsibility. People who had more positive attitudes towards COVID-19 vaccine safety (OR=2.53, p<0.001), were more likely to receive three or more doses of vaccine, as were those who manifested higher collective responsibility (were more scared that if they got sick they could transmit it to others who could get very sick. Psychological drivers that significantly predicted the likelihood of being completely vaccinated relative to being vaccine refusing were perceived vaccine safety, trust in information sources and collective responsibility. People who had more positive attitudes towards COVID-19 vaccine safety, who trusted information from regional TV channels more, and who manifested higher collective responsibility (who believed to a higher extent that It is important that all people get vaccinated against COVID-19 in order to achieve collective immunity) were more likely to be completely vaccinated relative to vaccine refusing. These findings highlight **the importance of perceived vaccine safety, collective responsibility, and perceived credibility of local media as the most important psychological drivers of COVID-19 vaccine behaviour that should be targeted by behavioural interventions**.

Sociological drivers that significantly predicted the likelihood of taking three or more vaccine doses relative to being vaccine refusing, as well as likelihood of being completely vaccinated relative to being vaccine refusing were descriptive norms, injunctive norms and perception of HCWs recommendation. Respondents who had neutral, somewhat positive and very positive general attitudes towards COVID-19 vaccination relative to very negative attitudes were more likely to take three or more vaccine doses. Respondents who assessed their friends' attitudes as somewhat negative, neutral and very positive relative to very negative were less likely to take three or more vaccine doses. Those who included National Health Authorities and HCWs in the group of agents having the least influence on their decision whether to get the vaccine, were significantly less likely to take three or more doses relative to be vaccine refusing. Also, respondents who rated communication with their healthcare practitioner as more responsive were more likely two take three or more doses. Respondents who had neutral, somewhat positive and very positive general attitudes towards COVID-19 vaccination relative to very negative attitudes were more likely to be completely vaccinated. Respondents who assessed their friends' attitudes as somewhat negative relative to very negative and community members' attitudes as neutral, somewhat positive and very positive relative to very negative were less likely to be completely vaccinated. Those who included family, National Health Authorities, HCWs and central public authorities in the group of agents having the most influence on their decision whether to get the vaccine, were significantly more likely to be completely vaccinated relative to be vaccine refusing. Also, respondents who consider their own attitudes as unimportant when making vaccination decision were less likely to be completely vaccinated, as well as those who included HCWs in the group of agents having the least influence on their vaccination decision. These findings suggest **that own attitudes were the most important factors influencing respondents' vaccination behaviour, but also the quality of communication and vaccine recommendations from HCWs, as well as descriptive and injunctive norms associated with National Health Authorities, HCWs, central public authorities and family.**

Environmental drivers that had the greatest impact on the likelihood of taking three or more vaccine

doses relative to being vaccine refusing, as well as on likelihood of being completely vaccinated relative to being vaccine refusing were perceived lack of information and use of information sources. Respondents who reported lower level of perceived lack of information about COVID-19 vaccines, who were less likely to rely on information about COVID-19 vaccination from friends, who were more likely to follow information from their doctor and from international organizations such as WHO, UNICEF, CDC were more likely to receive three or more vaccine doses. Respondents who perceived lower lack of information, who were more likely to follow information on COVID-19 vaccination from their doctor and less likely to rely on religious leaders as sources of COVID-19 vaccination related information were more likely to be completely vaccinated. **Important and potentially actionable is the finding that respondents who more frequently relied on their doctor, and international organizations (WHO, UNICEF, CDC) as a source of COVID-19 vaccine-related information were more likely to get vaccinated against COVID-19. Perceived lack of COVID-19 vaccine-related information and negative impact of using information coming from friends and religious leaders were also significant drivers of vaccination behaviour.**

7.2 Drivers of HCWs COVID-19 vaccination related behaviour

7.2.1 Vaccination behaviour

- In general, HCWs showed a high level of COVID-19 vaccination promotion behaviour. The majority of HCWs (85.3%) fully adhered to the prescribed COVID-19 vaccination schedule. Further, 80.5% always or often persuaded their patients to get the COVID-19 vaccine, 84.7% provided additional information about the COVID-19 vaccine to hesitant patients, 79.3% advised patients who were eligible to get the COVID-19 vaccine and 83.5% generally recommended people to get the COVID-19 vaccine.
- More than half (62.2%) of the HCWs received three or more doses of COVID-19 vaccine, while about a third (33.4%) were completely vaccinated. Only 0.7% were incompletely vaccinated with one dose, while 3.8% were not vaccinated at all. HCWs who had not been vaccinated against COVID-19 were significantly less likely to promote the COVID-19 vaccination.
- Physicians compared to nurses, general practitioners compared to physicians with other specialities and HCWs working in rural areas were more likely to engage in COVID-19 immunisation promotion behaviours. HCWs working at the tertiary healthcare level were less likely to promote COVID-19 vaccination than those working at the primary and secondary level.

7.2.2 Psychological drivers

- HCWs had moderately positive attitudes towards the efficacy and safety of the COVID-19 vaccines. More than two thirds believed that COVID-19 vaccines were safe and around three quarters were convinced that COVID-19 vaccines were effective. HCWs perceived the risk of COVID-19 disease to be moderately high.
- HCWs demonstrated moderately high level of trust in societal factors. The majority of HCWs had the highest trust in political (75.7%) and health authorities (71.1%). The most trusted sources of vaccine-related information for the vast majority of HCWs were National Health Authorities (Ministry of Health and National Agency for Public Health), continuing medical education (CME) on vaccines , international organizations (WHO, UNICEF, CDC), national scientific and professional conferences, publications and guidelines from relevant national institutions and organizations, international scientific and professional conferences, publications and guidelines of relevant international organizations, national and international scientific literature. Social networks and public media were rated as the least trustworthy sources. These findings suggest that HCWs find scientific and professional sources of vaccine-related information the most credible. Physicians were more likely to trust information obtained from CME, at national and international scientific conferences, national and international scientific literature, publications and guidelines of relevant national and international organizations, national health authorities and international organizations (WHO, UNICEF, CDC), while nurses were more likely to have confidence in public media and social networks.
- HCWs showed a moderately low level of susceptibility to conspiracy beliefs related to COVID-19. Around a third believed that coronavirus was man-made (36.4%), while around a

quarter agreed that the spread of coronavirus was a deliberate attempt to reduce the global population (23%). Nearly a fifth HCWs believed that Big Pharma created COVID-19 to profit from vaccines (19.3%), while 16.6% agreed that the spread of coronavirus was a deliberate attempt by governments to gain political control.

- The majority of HCWs felt responsible for their patients' decisions regarding COVID-19 vaccination (71.2%), with physicians more likely to feel this responsibility than nurses. While 82.5% of HCWs had a sense of duty to advise patients to be vaccinated against COVID-19, this feeling was more pronounced among nurses. HCWs demonstrated moderately high level of motivation to advocate for vaccination.
- Male HCWs were significantly more confident in the safety of COVID-19 vaccines, less prone to believe in conspiracy theories, and more motivated to advocate for vaccination than female HCWs.
- Older HCWs and those with more years of practice had higher motivation for advocacy for vaccination.
- Physicians had significantly more positive attitudes towards COVID-19 vaccine efficacy and safety, considered COVID-19 to be more dangerous, reported significantly higher level of trust in societal factors, were less prone to conspiracy beliefs, and were more motivated to advocate for vaccination than nurses.
- HCWs from the primary healthcare level had more appreciation for vaccine efficacy and safety, considered COVID-19 as more dangerous, were less likely to believe in conspiracy theories and were more motivated to advocate for vaccination than HCWs from the secondary and tertiary healthcare level. HCWs from the tertiary healthcare level manifested significantly lower level of societal trust.
- General practitioners were more confident in COVID-19 vaccine safety and had higher motivation to advocate for vaccination than physicians with other specialties.
- HCWs who reported no chronic diseases had significantly higher level of social trust than those with chronic diseases and were less prone to believe in conspiracy theories.
- HCWs from rural areas had higher motivation to advocate for vaccination than HCWs from urban areas.

7.2.3 Sociological drivers

- The majority (75.6%) of HCWs had positive general attitudes towards COVID-19 vaccination. Most believed that National Health Authorities (89.7%), central public authorities (80.7%), their colleagues (73.8%), local public authorities (72.1%) and members of their family (69.7%) had positive attitudes towards COVID-19 vaccination. The smallest proportion of HCWs believed that religious leaders (14.2%) had a positive attitude towards COVID-19 vaccination, and 15.6% did not know the attitude of their religious leader. Physicians had more positive general attitudes towards COVID-19 vaccination than nurses and were more likely to believe that their family members, friends, people from the community/neighbourhood and colleagues supported COVID-19 vaccination.
- Over 80% of HCWs believed it was important to be vaccinated against COVID-19. Most believed that the National Health Authorities (89.2%), central public authorities (83.9%), local public authorities (77.9%), colleagues (77.9%), family members (77.5%), friends (64.7%) and people from the community/neighbours (60.5) thought it was moderately or extremely important for them to be vaccinated against COVID-19. Physicians were more likely than nurses to appreciate the importance of COVID-19 vaccination, and to believe that family, friends, people from the community/neighbourhood and their colleagues thought it was important for them to be vaccinated against COVID-19.
- The vast majority of HCWs ascribed the greatest influence on their intention to get vaccinated against COVID-19 to their own attitudes towards vaccination (83.6%). The most influential social agents were National Health Authorities (47.8%), colleagues (44.6%), and family (37.9%). Religious leaders were considered the least influential in this regard by 57% of respondents. People from the community and media were also considered to have the least influence on HCWs' intention to be vaccinated against COVID-19.

7.2.4 Environmental drivers

- Overall, HCWs did not report significant competence-related issues in answering patients' questions about COVID-19 vaccines' efficacy, quality and safety. Competence-related issues were more likely to be experienced by younger HCWs. HCWs working at the primary healthcare level and general practitioners were less likely to report lack of information.
- The most common sources of vaccine-related information used by HCWs were national Health Authorities - Ministry of Health, National Agency for Public Health (77.5%), CME (75.2%), international organizations – WHO, UNICEF, CDC (71.1%), publications and guidelines from relevant national institutions and organizations (67.5%), national scientific and professional conferences (65.6%) and national scientific literature (62.8%). The least used sources were social networks (21.1%) and public media (25.3%).
- System support for COVID-19 vaccination was perceived as very high by HCWs. A large majority of HCWs (over 85%) believed that there were clear official written guidelines for implementing good practice for COVID-19 immunization, and that national authorities encouraged them to recommend COVID-19 vaccinations. Similarly, around 80% of HCWs reported that they had received sufficient training on how to apply official guidelines for COVID-19 immunization, how to communicate with patients about COVID-19 immunization, and how to deal with vaccine hesitancy. HCWs working at the tertiary healthcare level and those from urban areas perceived system support as lower, while general practitioners, older HCWs and those with more years of practice perceived system support as significantly higher.

7.2.5 Drivers significantly associated with COVID-19 vaccine behaviour in HCWs

Psychological drivers that were significantly associated with COVID-19 vaccine promoting behaviour among HCWs were perceived vaccine efficacy, trust in information sources, perceived responsibility and motivation to advocate for vaccination. HCWs who had more positive attitudes towards the efficacy of the COVID-19 vaccine, who placed more trust in vaccine-related information received from publications and guidelines of relevant national organizations and information provided by National Health Authorities (Ministry of Health and National Agency for Public Health), who had a greater sense of duty to advise patients to get vaccinated, who placed higher value on advocacy for vaccination, and who felt more competent to advocate for vaccination, were more likely to engage in vaccine promotion behaviour. These findings suggest that **confidence in vaccine efficacy, trust in official professional and scientific sources of vaccine-related information are important determinants that significantly shape HCWs' behaviour. Awareness of the professional responsibilities of the health profession motivates HCWs to engage in vaccine promotion and should therefore be given due attention.**

Sociological drivers that were significantly associated with COVID-19 vaccine promotion behaviour in HCWs were descriptive and injunctive norms. HCWs who had positive general attitudes towards COVID-19 vaccination, who themselves believed that COVID-19 vaccination was important, who believed that their religious leaders have negative attitudes towards COVID-19 vaccination and who believed that their colleagues thought it was extremely important to be vaccinated against COVID-19 were more likely to promote vaccination. HCWs who considered National Health Authorities (Ministry of Health and National Agency for Public Health) to be among the most influential factors in their decision to be vaccinated against COVID-19 were more likely to promote COVID-19 vaccination. These findings suggest that both **descriptive and injunctive norms associated with health authorities and colleagues, play an important role in shaping HCW vaccination behaviour and should be taken into account when designing interventions to promote vaccination.**

Environmental drivers associated with HCWs' COVID-19 vaccine promotion behaviours were perceived lack of information, frequency of use of specific information sources, and perceived system support for COVID-19 immunisation. HCWs who perceived a lower lack of COVID-19 vaccine-related information, who perceived higher system support, and those who used publications and guidelines from relevant national institutions and organizations, National Health Authorities, and international organizations (WHO, UNICEF, CDC) more frequently, and those who used information from social networks less often, were more likely to promote COVID-19 immunisation. The results suggest that **perceived competence in answering patients' questions about vaccines, system support and reliance on professional information sources influenced vaccine promotion behaviour.**

7.3 Unexpected findings and possible explanations

Unexpected findings were related to sociological drivers of vaccination behaviour. Respondents from the general population who assessed their friends' attitudes as somewhat negative, neutral and very positive relative to very negative were less likely to take three or more vaccine doses. Similarly, respondents who assessed their friends' attitudes as somewhat negative relative to very negative and community members' attitudes as neutral, somewhat positive and very positive relative to very negative were less likely to be completely vaccinated. These findings could be explained by the lower perceived need for personal responsibility to get vaccinated when people in one's social circle (friends, people from the community) have positive attitudes toward vaccination and are likely already vaccinated. HCWs who believed that their religious leaders have negative attitudes towards COVID-19 vaccination were more likely to promote vaccination, which could be interpreted by HCWs' need to compensate for negative social influence. These findings suggest that descriptive norms have complex influence on vaccination behaviour and require further research to better understand how the social environment and contextual factors may influence vaccination behaviour.

8. Recommendations

This section presents an overview of the recommendations that are derived directly from the findings and conclusions of this research. They are associated with the different drivers that were defined in the theoretical framework and identified as significant drivers of vaccine hesitancy in both general population and HCWs in Moldova. Two key principles were applied when developing the recommendations: 1) That they follow directly from the conclusions and support the findings and 2) That they are 'actionable' by means of interventions and/or policies.

1. The finding that vaccine safety concerns was among the most influential psychological drivers of COVID-19 vaccination behaviour in the general population, together with the finding that respondents had negative attitudes towards vaccine efficacy and safety, and perceived the danger of COVID-19 as low indicates the need to develop interventions and educational campaigns focused on these specific issues (education based on risk communication – COVID-19 vaccine safety surveillance mechanisms and both common and expected, and rare but serious vaccine side effects[25]). As findings also suggest that less educated people living in the central part of the country were more concerned about COVID-19 vaccine safety, the interventions and education campaigns should particularly target those demographic groups. Targeted education should be accompanied by dialogue-based interventions to encourage individuals to accept vaccination. The awareness of collective responsibility was another important psychological driver of COVID-19 vaccination behaviour in general population, suggesting the need to provide information about collective benefits and herd immunity. Appeal on altruism and social benefits could be employed, using empathy with vaccine hesitant individuals.
2. The finding that the trust in societal factors was relatively low in general population, and that vaccine refusing people had lower level of trust and were more likely to believe in conspiracy theories, implies the need for dialogue-based interventions informed by social listening to people's doubts, fears and misconceptions in order to provide timely response, support and solutions. One possible approach to dialogue-based interventions is community engagement (CE)[26] that aims to meet particular population needs through health education and discussion, health service support, and community mobilization. Community engagement allows trusted local community leaders, public health workers and healthcare providers to share information about the importance of vaccine uptake in their communities, and community members to ask questions and voice their concerns about the diseases and the vaccines.[27]
3. The finding that family members and HCWs are the most credible and used source of information coupled with the finding that the use of COVID-19 vaccine-related information from friends and religious leaders had a negative impact on people's vaccine acceptance, implies that COVID-19 promotive vaccination messages and interventions should target information to families and communities, as the potential for dissemination is highly likely to inform future immunization decisions. Although only a minority relied on COVID-19 vaccine information coming from religious leaders, those who did so were less likely to be vaccine accepting, suggesting the need to involve religious leaders in the promotion of vaccination giving them a role in disseminating key information.
4. The finding that vaccine refusing people were significantly more likely to perceive a lack of information about COVID-19 vaccines, coupled with the finding that even 41.9% of respondents reported knowing someone who had experienced a serious adverse reaction after COVID-19 vaccination (although the rate of serious adverse reactions after COVID-19 vaccination is around 0.01%) points to the knowledge gaps that influence COVID-19 vaccination behavior, and suggests the need to evaluate the main reasons underlying the parents' perception of a lack of necessary vaccine-related information and to enable adequate access to trustworthy information, using credible spokespersons (primarily healthcare professionals). Scientific

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results need to be adapted to different socio-cultural realities, and risk communication needs to be more accessible to females, living in urban areas, in Chisinau, northern and southern parts of the country (as these people perceived a significantly higher lack of information)[28].

5. Although structural barriers to vaccination (access, costs, type of the vaccine) were generally perceived as very low, they were perceived as higher by those respondents who were incompletely vaccinated, as well as by female respondents, those living in urban areas, and particularly in Chisinau. Interventions addressing practical issues of geographical access and organization of vaccination services such as on-site vaccination, easier scheduling of appointments, improvements in service quality and reduced out-of-pocket costs, could increase COVID-19 vaccine acceptance in some individuals, especially in urban areas.
6. The finding that attitudes towards vaccine efficacy together with the feeling of responsibility towards patients and trust in professional information sources (trust in publications and guidelines of relevant national organizations and National Health Authorities) were significant predictors of vaccination behaviour among HCWs implies the importance of addressing these factors comprehensively. Given that this study showed that perceived lack of information negatively influenced COVID-19 vaccine promotion behaviour in HCWs, COVID-19 vaccine-related education transparently targeting vaccine efficacy concerns should be offered to HCWs at all healthcare levels, for all specialties, and both for physicians and nurses. The preferred mode of education would be through continuing medical education (CME) courses. Further, official channels of communication with HCWs need to be diversified, and modes of education for HCWs through online platforms should also be considered and employed[29]. HCWs need to be trained to assess the validity and credibility of information coming from informal sources, and to provide them with sources of credible information. In addition, since results of this study show that important drivers of HCWs' vaccine behaviour are awareness of professional responsibilities of healthcare profession and motivation for advocacy for vaccination, coupled with the finding that the quality of communication and COVID-19 vaccine-related recommendations provided by HCWs were significantly associated with COVID-19 vaccine behaviour in general population, it is of great importance to equip HCWs with the knowledge, effective interpersonal vaccine communication skills, confidence and resources to recommend vaccines. As the lack of competence to answer patients' questions regarding COVID-19 vaccination (lack of information) and motivation to advocate for COVID-19 vaccination were less pronounced among younger HCWs, nurses and those working at the secondary and tertiary levels, with a specialty other than general practitioner, these HCWs should be particularly targeted by education interventions tailored to their specific needs.
7. Social norms had significant impact on HCW's vaccination behaviour, especially positive norms of professional social agents such as National Health Authorities and colleagues, implying the need to continue to promote positive social norms in the professional environment and foster a work culture that promotes COVID-19 vaccine uptake. For example, trusted HCWs could be identified and leveraged as vaccine champions and engaged in peer-led campaigns. However, HCWs are not immune to the influence of their community, friends and families, so wider promotion of vaccine-supportive policies and community engagement activities could also contribute to reduce COVID-19 vaccine hesitancy among HCWs.
8. Although, on average, HCWs assessed system support for COVID-19 vaccination as high, it was established as a significant predictor of HCWs' COVID-19 vaccine promotion behaviour since those who perceived system support as lower were less likely to promote COVID-19 vaccination. This implies that there is still room for developing and strengthening such support at the national level, in the form of precise guidelines and trainings, especially for younger physicians of specialties other than general practitioners, working at the tertiary level, who perceived system support as lower, and HCWs working in urban areas. It would be particularly important to investigate what "better system support" entail for those HCWs and what are the system support improvements they would appreciate the most.

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29 As this study shows that HCWs who found professional and scientific sources of information as most credible and used them most frequently were more likely to promote COVID-19 vaccination, while HCWs who more frequently used COVID-19 vaccine-related information from social networks were less likely to promote COVID-19 vaccination.

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10. Annexes

Annex 1: Selection of drivers that influence COVID-19 vaccination-related behaviour

Level 1 driver (factor)	Evidence based*	Relevant for CHI	Relevant for all target groups**	Feasible***	Actionable****	Applicable for Moldova	Selected
Psychological factors							
Cognitive bias (Belief bias)	x	x	x	ø	ø	x	No
Cognitive bias (Information avoidance-Base-rate neglect)	x	x	x	ø	ø	x	No
Attitudes (Beliefs - Perceived vaccine efficacy)	x	x	x	x	x	x	Yes
Attitudes (Beliefs - Perceived vaccine safety)	x	x	x	x	x	x	Yes
Attitudes (Beliefs - Perceived danger of disease and likelihood of infection)	x	x	x	x	x	x	Yes
Attitudes (Beliefs - Trust in societal factors)	x	x	x	x	x	x	Yes
Attitudes (Beliefs - Trust in information sources)	x	x	x	x	x	x	Yes
Interests (Alternative health beliefs and worldviews)	x	x	x	x	x	x	Yes
Attitudes (Awareness and knowledge)	x	x	x	x	x	x	Yes
Attitudes (Emotions towards vaccination)	x	x	x	ø	ø	x	No
Attitudes (Emotions - Perceived Responsibility)	x	x	x	x	x	x	Yes
Attitudes (Past experience)	x	x		x	x	x	Yes
Limited rationality (Heuristics – Irrational vs.rational thinking)	x	x	x	x	x	x	Yes
Self-efficacy (Self-image - advocacy for vaccination)	x	x	ø	x	x	x	Yes
Sociological factors							
Social influence (Descriptive norms - Impact on General Attitudes About the Vaccine)	x	x	x	x	x	x	Yes
Social influence (Descriptive norms - Impact on Importance of Getting Vaccinated)	x	x	x	x	x	x	Yes
Social influence (Injuctive norms - Self-Ranking Social Influencers)	x	x	x	x	x	x	Yes

Level 1 driver (factor)	Evidence based*	Relevant for CHI	Relevant for all target groups**	Feasible***	Actionable****	Applicable for Moldova	Selected
Meta-norms (Moral norms – Religiousness)	x	x	ø	ø	ø	ø	No
Social influence (Influence by gatekeepers - Recommendations by HCP)	x	x	ø	x	x	x	Yes
Environmental factors							
Communication environment (Factual/ scientific information - Perceived lack of information)	x	x	x	x	x	x	Yes
Communication environment (Use of information sources)	x	x	x	x	x	x	Yes
Structural Barriers (Availability, access to and quality of services – Convenience)	x	x	ø	x	x	x	Yes
Governing entities (Recognition of the issue – Support from the system)	x	x	ø	x	x	x	Yes
Eligibility for inclusion: minimum of 5 criteria met							

** Grounded in scientific evidence and country experience (evidence generated from document review and KIIs for each of the target groups)*

*** Parents/caregivers; healthcare workers;*

**** How easily or conveniently we can measure each driver*

***** Drivers on which we can act on (having practical value)*

Annex 2: Origin of items for the questionnaire for general population

Indicator	Items	Origin of items
C1.1 Perceived vaccine efficacy	Overall, I think that vaccines against COVID 19 are effective.	**Vaccine Hesitancy Scale (VHS) adjusted** (Shen et al., 2021) „COVID-19 vaccines are effective. “
	Vaccination is the only way to stop the COVID-19 pandemic.	Qualitative research (e.g. Fadda et al., 2021)
	In my view the epidemic of COVID-19 would last as long as it lasts, with or without the vaccine (vaccination).	Qualitative research (e.g. Fadda et al., 2021)
	In my opinion there is not enough evidence that the COVID-19 vaccines really protect against the infection.	Qualitative studies (e.g. Moore et al., 2021; Sema Aci et al., 2021)
C 1.2 Perceived vaccine safety	In general, I think that vaccines against COVID 19 are safe.	**The Vaccination Confidence Scale** (Gilkey et al., 2014) “Vaccines are safe.” *Benefits*
	I think that it is safer to get COVID-19 than to get vaccinated against it.	Qualitative studies (e.g. Küçükali et al., 2022) “Side-effects of the vaccine are likely to be worse than COVID-19.” (Kumar et al., 2021)

Indicator	Items	Origin of items
	I am quite sure that vaccines against COVID-19 contain substances that can harm human health.	Qualitative studies (Moore et al., 2021; Sema Aci et al., 2021)
	The speed with which the COVID-19 vaccines were produced, made me question their safety.	Qualitative studies (e.g. Lockyer et al., 2021; Moore et al., 2021)
C1.3 Perceived danger of disease and likelihood of infection	I think that the danger of COVID-19 is overstated.	**Attitudes and beliefs about COVID-19** (Sherman et al., 2021) "Too much fuss is being made about the risk of coronavirus."
	I am sure that COVID-19 does not give more severe symptoms than seasonal flu.	Qualitative studies (e.g. Küçükali et al., 2022)
	I consider myself as being at low risk of contracting COVID-19.	**Beliefs and attitudes about COVID-19 and a COVID-19 vaccination** (Sherman et al., 2020) **"**To what extent do you think coronavirus poses a risk to you personally?"
C1.4 Personal experience	I experienced a serious adverse reaction after receiving the COVID-19 vaccine.	Adjusted from UNICEF report from Montenegro
	I personally know someone who experienced a serious adverse reaction after receiving a COVID-19 vaccine.	Qualitative studies (e.g. Williams and Dienes, 2021)
C1.5 Collective responsibility	I am scared that if I get sick with COVID-19, I could transmit it to others who could get very sick.	**5C vaccine hesitancy scale** (Betsch et al., 2018) "I get vaccinated because I can also protect people with a weaker immune system"
	It is important that we all get vaccinated against COVID-19, in order to achieve collective immunity.	**5C vaccine hesitancy scale** (Betsch et al., 2018) "Vaccination is a collective action to prevent the spread of diseases"
	Since a sufficient number of people will be vaccinated against COVID-19, I do not think it is necessary for me to get the vaccine.	**5C vaccine hesitancy scale** (Betsch et al., 2018) "When everyone is vaccinated, I don't have to be vaccinated, too"
C1.6 Conspiracy beliefs	I think that COVID-19 is a hoax.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The virus is a hoax."
	I believe that coronavirus is manmade.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The virus is manmade"
	In my opinion the spread of the corona virus is a deliberate attempt to reduce the size of the global population.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The spread of the virus is a deliberate attempt to reduce the size of the global population".
	As I see it, the spread of the corona virus is a deliberate attempt by governments to gain political control.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The spread of the virus is a deliberate attempt by governments to gain political control."
	I consider that Big Pharma created COVID-19 to profit from the vaccines.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "Big Pharma created COVID19 to profit from the vaccines."
	I believe that COVID-19 is caused by 5G and that it is a form of radiation poisoning transmitted through radio waves.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "COVID-19 is caused by 5G and is a form of radiation poisoning transmitted through radio waves".
	I think that the COVID-19 vaccine will be used to carry out mass sterilization.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The vaccine will be used to carry out mass sterilization".

Indicator	Items	Origin of items
C 2.1 Recommendations by health care providers	My doctor recommended that I get vaccinated against COVID-19.	**Attitudes towards COVID-19 vaccines (Banham et al., 2021**) "Would take vaccine if advised by family doctor/pharmacist/public health official"
	I trust my doctor's recommendation on COVID-19.	**Vaccine Hesitancy Scale (VHS) adjusted** (Shen et al., 2021) "I will do what my doctor or health care provider recommends about the COVID19 vaccines."
	My doctor answers all my questions regarding COVID-19, and listenes to my concerns.	Qualitative research (e.g. Fadda et al., 2021)
C2.2 Impact on General Attitudes About the Vaccine	What is your family's (friends/local leaders/national health authorities/your community/religious leaders/ healthcare providers/your government) attitude toward the COVID-19 vaccination?	Adopted/adjusted from the UNICEF research conducted in Ghana (Nurzhynska, A. et al. (2022). Using behavioural insights to understand the acceptance of COVID-19 vaccine in Ghana. Manuscript in preparation).
C2.3 Impact on Importance of Getting Vaccinated	How important does your family (friends/local leaders/ national health authorities/your community/religious leaders/healthcare providers/your government) think it is for you to get the COVID-19 vaccine?	Adopted/adjusted from the UNICEF research conducted in Ghana (Nurzhynska, A. et al. (2022). Using behavioural insights to understand the acceptance of COVID-19 vaccine in Ghana. Manuscript in preparation).
C2.4 Self-Ranking Social Influencers	Who has the biggest influence over your decision about whether to get COVID-19 vaccine? Who has the least amount of influence over your decision about whether to get COVID-19 vaccine? (yourself, family, friends, local, leaders, community members, national health authorities, religious leaders, healthcare providers, government, media)	Adopted/adjusted from the UNICEF research conducted in Ghana (Nurzhynska, A. et al. (2022). Using behavioural insights to understand the acceptance of COVID-19 vaccine in Ghana. Manuscript in preparation).
C3.1 Trust in societal factors	I am fully confident in the recommendations given by the Ministry of Health regarding the vaccination against COVID-19.	**Attitudes and beliefs about a COVID-19 vaccination** (Sherman et al., 2021) „If a coronavirus vaccination were recommended by the Government, I would get vaccinated".
	I believe that the official data on the quality and frequency of adverse reactions to COVID-19 vaccines are completely true.	Qualitative studies (Moore et al., 2021; Sema Aci et al., 2021; Küçükali et al., 2022)
	I think that pharmaceutical companies cover up the dangers of COVID-19 vaccines.	**Vaccine Conspiracy Belief Scale** (Shapiro et al., 2018) e.g. "Pharmaceutical companies cover up the dangers of vaccines."
	I think that the principal motive for the scientists who participated in the creation of the COVID-19 vaccines is profit.	**The Vaccine Attitudes Examination Scale (VAX)** (Martin and Petrie, 2017) "Vaccines make a lot of money for pharmaceutical companies, but do not do much for regular people." Concerns about commercial profiteering.
	I believe that political authorities, when they encourage COVID-19 vaccination, do so with the best of intentions.	**Attitudes and beliefs about a COVID-19 vaccination** (Sherman et al., 2021) „If a coronavirus vaccination were recommended by the Government, I would get vaccinated". **Vaccine Attitudes Examination (VAX) Scale (**Mascarenhas Danabal et al., 2021) "I believe that authorities promote COVID-19 vaccine for political gain and financial gain, not for people's health ."
C3.2 Trust in information sources	Information Sources (scientific literature, national TV channels, internet portals, YouTube channels, social networks, family, friends, family physician, healthcare professionals in media, religious leaders, government).	Adjusted from UNICEF, 2017, Knowledge, attitudes and practice regarding childhood vaccination in Serbia.

Indicator	Items	Origin of items
C4.1 Perceived lack of information	It is hard for me to make the decision whether to vaccinate myself against COVID-19, since there is a lack of information about COVID-19 vaccine.	**Attitudes and beliefs about a COVID-19 vaccination** (Sherman et al., 2021) "I know enough about the coronavirus illness to make an informed decision about whether or not to get vaccinated", "I know enough about the coronavirus vaccine to make an informed decision about whether or not to get vaccinated" Qualitative studies (e.g. Khankeh et al., 2021)
	Incomplete information regarding the COVID-19 vaccine I come across make me confused.	**Attitudes and beliefs about a COVID-19 vaccination** (Sherman et al., 2021) I know enough about the coronavirus illness to make an informed decision about whether or not to get vaccinated I know enough about the coronavirus vaccine to make an informed decision about whether or not to get vaccinated. Qualitative studies (e.g. Khankeh et al., 2021)
	Contradictory information regarding the COVID-19 vaccine I come across make me confused.	**Attitudes and beliefs about a COVID-19 vaccination** (Sherman et al., 2021) know enough about the coronavirus illness to make an informed decision about whether or not to get vaccinated I know enough about the coronavirus vaccine to make an informed decision about whether or not to get vaccinated. Qualitative studies (e.g. Khankeh et al., 2021)
	I have absolutely all the information I need regarding COVID-19 vaccine/vaccination.	**Attitudes and beliefs about a COVID-19 vaccination** (Sherman et al., 2021) I know enough about the coronavirus illness to make an informed decision about whether or not to get vaccinated I know enough about the coronavirus vaccine to make an informed decision about whether or not to get vaccinated. Qualitative studies (e.g. Khankeh et al., 2021)
C4.2 Use of the information sources	Information Sources (scientific literature, national TV channels, internet portals, YouTube channels, social networks, family, friends, family physician, healthcare professionals in media, religious leaders, government).	Adjusted from UNICEF, 2017, Knowledge, attitudes and practice regarding childhood vaccination in Serbia.
C5. Structural barriers/ Convenience	I do not know where and how I can get the COVID-19 vaccines.	Qualitative studies (Bangura et al., 2020; Wilder-Smith et al., 2020; Alabadi et al., 2020; Kalaij et al. 2021)
	There is no vaccination center or opportunity to get vaccinated against COVID-19 close by.	
	It is too burdensome to get to the vaccination center for COVID-19 in terms of time.	
	It is too burdensome to get to the vaccination center for COVID-19 in terms of money spent on travelling.	
	It is difficult to receive an appointment for vaccination against COVID-19.	
	I cannot get the COVID-19 vaccine I want.	
	Vaccination against COVID-19 is important to me for practical considerations (e.g. to be able to travel, or to be able to do my job).	

Indicator	Items	Origin of items
	Vaccination against COVID-19 is important to me to escape pandemic-related restrictions.	
	It will be easy for me to get the COVID-19 vaccine.	Adopted from the UNICEF research conducted in Ghana (Nurzhynska, A. et al. (2022). Using behaveo-ural insights to understand the acceptance of COVID-19 vaccine in Ghana. Manuscript in preparation).
	It will be stressful for me to get the COVID-19 vaccine.	

Annex 3: Origin of items for the questionnaire for HCWs (COVID-19)

Indicator	Items	Origin of items
C1.1 Perceived vaccine efficacy	Overall, I think that vaccines against COVID 19 are effective.	**Vaccine Hesitancy Scale (VHS) adjusted** (Shen et al., 2021) „COVID-19 vaccines are effective. "
	Vaccination is the only way to stop the COVID-19 pandemic.	Qualitative research (e.g. Fadda et al., 2021)
	In my view the epidemic of COVID-19 would last as long as it lasts, with or without vaccination.	Qualitative research (e.g. Fadda et al., 2021)
	In my opinion there is not enough evidence that the COVID-19 vaccines really protect against the virus/infection.	Qualitative studies (e.g. Moore et al., 2021; Sema Aci et al., 2021)
C 1.2 Perceived vaccine safety	In general, I think that vaccines against COVID 19 are safe.	**The Vaccination Confidence Scale** (Gilkey et al., 2014) "Vaccines are safe." *Benefits*
	I think that it is safer to get COVID-19 than to get vaccinated against it.	Qualitative studies (e.g. Küçükali et al., 2022) "Side-effects of the vaccine are likely to be worse than COVID-19." (Kumar et al., 2021)
	I am quite sure that vaccines against COVID-19 contain substances that can harm human health.	Qualitative studies (Moore et al., 2021; Sema Aci et al., 2021)
	The speed with which the COVID-19 vaccines were produced, made me question their safety.	Qualitative studies (e.g. Lockyer et al., 2021; Moore et al., 2021)
C1.3 Perceived danger of disease and likelihood of infection	I think that the danger of COVID-19 is overstated.	**Attitudes and beliefs about COVID-19** (Sherman et al., 2021) "Too much fuss is being made about the risk of coronavirus."
	I am sure that COVID-19 does not give more severe symptoms than seasonal flu.	Qualitative studies (e.g. Küçükali et al., 2022)
	I consider myself as being at low risk of contracting COVID-19.	**Beliefs and attitudes about COVID-19 and a COVID-19 vaccination** (Sherman et al., 2020) **"**To what extent do you think coronavirus poses a risk to you personally?"
C1.4 Conspiracy beliefs	I think that COVID-19 is a hoax.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The virus is a hoax."
	I believe that coronavirus is manmade.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The virus is manmade"
	In my opinion the spread of the corona virus is a deliberate attempt to reduce the size of the global population.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The spread of the virus is a deliberate attempt to reduce the size of the global population".

Indicator	Items	Origin of items
	As I see it, the spread of the corona virus is a deliberate attempt by governments to gain political control.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The spread of the virus is a deliberate attempt by governments to gain political control."
	I consider that Big Pharma created COVID-19 to profit from the vaccines.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "Big Pharma created COVID19 to profit from the vaccines."
	I believe that COVID-19 is caused by 5G and that it is a form of radiation poisoning transmitted through radio waves.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "COVID-19 is caused by 5G and is a form of radiation poisoning transmitted through radio waves".
	I think that the COVID-19 vaccine will be used to carry out mass sterilization.	**OCEANS Coronavirus Conspiracy Scale (Freeman et al., 2020)** "The vaccine will be used to carry out mass sterilization".
C2.1 Perceived responsibility	I feel responsible for the decisions regarding vaccination against COVID-19 made by my patients.	Tuckerman et al., 2020; Esposito t al., 2007, Lin et al., 2021
	It is my duty to advise patients to get vaccinated against COVID-19.	„A recommendation is my responsibility" *Views and beliefs towards influenza and influenza vaccination* (Tuckerman et al., 2020) Esposito et al., 2007, Lin et al., 2021
C2.2 Perceived lack of information	I feel completely competent when answering patients' questions about the effectiveness of COVID-19 vaccines.	**Knowledge towards COVID-19 vaccine** (Lataifeh et al., 2022) "Do you have sufficient information about COVID-19 vaccine?"
	I feel completely competent when answering patients' questions about the quality of COVID-19 vaccines.	**Knowledge towards COVID-19 vaccine** (Lataifeh et al., 2022) "Do you have sufficient information about COVID-19 vaccine?"
	I feel completely competent when answering patients' questions about the safety of COVID-19 vaccines.	**Knowledge towards COVID-19 vaccine** (Lataifeh et al., 2022) "Do you have sufficient information about COVID-19 vaccine?"
C2.3 Self-image (advocacy for vaccination	Motors of engagement with vaccination advocacy: MovAd scale	**MovAd scale** (Vallée-Tourangeau et al., 2017)
C3.1 Impact on General Attitudes About the Vaccine	What is your family's (friends/local leaders/national health authorities/your community/religious leaders/healthcare providers/your government) attitude toward the COVID-19 vaccination?	Adopted/adjusted from the UNICEF research conducted in Ghana (Nurzhynska, A. et al. (2022). Using behavioural insights to understand the acceptance of COVID-19 vaccine in Ghana. Manuscript in preparation).
C3.2 Impact on Importance of Getting Vaccinated	How important does your family (friends/local leaders/ national health authorities/your community/religious leaders/ healthcare providers/your government) think it is for you to get the COVID-19 vaccine?	Adopted/adjusted from the UNICEF research conducted in Ghana (Nurzhynska, A. et al. (2022). Using behavioural insights to understand the acceptance of COVID-19 vaccine in Ghana. Manuscript in preparation).
C3.3 Self-Ranking Social Influencers	Who has the biggest influence over your decision about whether to get COVID-19 vaccine? Who has the least amount of influence over your decision about whether to get COVID-19 vaccine? (yourself, family, friends, local, leaders, community members, national health authorities, religious leaders, your colleagues/health professionals, government, media)	Adopted/adjusted from the UNICEF research conducted in Ghana (Nurzhynska, A. et al. (2022). Using behavioural insights to understand the acceptance of COVID-19 vaccine in Ghana. Manuscript in preparation).

Indicator	Items	Origin of items
C4.1 Trust in societal factors	I am fully confident in the recommendations given by the Ministry of Health regarding the vaccination against COVID-19.	**Attitudes and beliefs about a COVID-19 vaccination** (Sherman et al., 2021) „If a coronavirus vaccination were recommended by the Government, I would get vaccinated".
	I believe that the official data on the quality and frequency of adverse reactions to COVID-19 vaccines are completely true.	Qualitative studies (Moore et al., 2021; Sema Aci et al., 2021; Küçükali et al., 2022).
	I think that pharmaceutical companies cover up the dangers of COVID-19 vaccines.	**Vaccine Conspiracy Belief Scale** (Shapiro et al., 2018) e.g. "Pharmaceutical companies cover up the dangers of vaccines."
	I think that the principal motive for the scientists who participated in the creation of the COVID-19 vaccines is profit.	The Vaccine Attitudes Examination Scale (VAX) (Martin and Petrie, 2017) "Vaccines make a lot of money for pharmaceutical companies, but do not do much for regular people." Concerns about commercial profiteering.
	I believe that political authorities, when they encourage COVID-19 vaccination, do so with the best of intentions.	**Attitudes and beliefs about a COVID-19 vaccination** (Sherman et al., 2021) „If a coronavirus vaccination were recommended by the Government, I would get vaccinated" **Vaccine Attitudes Examination (VAX) Scale (**Mascarenhas Danabal et al., 2021) "I believe that authorities promote COVID-19 vaccine for political gain and financial gain, not for people's health ."
C4.2 Trust in information sources	Information Sources (CME on vaccines national and international scientific and professional conferences, scientific literature, national and international publications and guidelines, public media, colleagues, social networks, government)	Adjusted from UNICEF, 2017, Knowledge, attitudes and practice regarding childhood vaccination in Serbia.
C5 Use of the information sources	Information Sources (CME on vaccines national and international scientific and professional conferences, scientific literature, national and international publications and guidelines, public media, colleagues, social networks, government).	Adjusted from UNICEF, 2017, Knowledge, attitudes and practice regarding childhood vaccination in Serbia.
C6 Support from the system	There are clear official written guidelines for the implementation of good practice regarding COVID-19 vaccination.	Topic adjusted from Lin et al., 2021.
	National health authorities are encouraging doctors to recommend the COVID-19 vaccination.	
	I received sufficient training regarding the application of official guidelines concerning COVID-19 vaccination.	
	I received sufficient training on interpersonal communication for COVID-19 immunization.	

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