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

BRIEF

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Authors - Euro Health Group Team:

Writers:

Smiljana Cvjetkovic (Team member)

Vida Jeremic-Stojkovic (Team member)

Data analysis:

Stefan Mandic-Rajcevic (Data Analyst)

Peer review and QA:

Sanja Matovic-Miljanovic (Team Leader)

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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
MOH	Ministry of Health
NAPH	National Agency for Public Health
UNICEF	The United Nations Children's Fund
WHO	World Health Organization

1 Brief introduction

Understanding the factors influencing people's COVID-19 vaccination-related choices and practices in Moldova will provide government and decision-makers with insights into the barriers and drivers of immunisation among priority target groups and enable them to design and implement evidence-based interventions for high and equitable immunisation coverage.

The adapted Behavioural Drivers Model (BDM) was used to understand the factors (drivers) that influence people's immunisation decisions and practices. Two cross-sectional studies were conducted through the collaborative research network of the Euro Health Group (EHG) team, the UNICEF country office in Moldova, and the CIVIS team, under the supervision of the UNICEF Regional Office for Europe and Central Asia (ECARO) and the National Agency for Public Health (NAPH) of the Republic of Moldova. The first survey included general adult population (aged 18 and above) in Moldova and was conducted during the period from 28 October 2023 to 24 February 2024, using Computer-Assisted Personal Interviewing (CAPI) as a data collection mode. The second survey included nationally representative sample of healthcare workers (HCWs) from primary, secondary and tertiary health care level in Moldova and was conducted during the same period using the same methodology (CAPI). Multi-stage stratified random sampling was applied for the population survey, with settlements being the primary sampling units. The survey with HCWs was conducted in the same localities generated for population survey, but with proportional distribution of health workers per region and locality, based on official statistics provided by the National Agency for Public Health. Responses from 1033 respondents (general population) and 1031 HCWs were included in the analysis.

Summary of study results, conclusions and recommendations are presented below. Detailed results are presented in the full version of the report "Behaviour insights research on drivers influencing COVID-19 vaccination related behaviours in Moldova" (127 pages).

2 Summary of Findings and Conclusions

2.1 Drivers of general population COVID-19 vaccination related behaviour

2.1.1 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.

2.1.2 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.

2.1.3 Sociological drivers

In terms of social influence, **descriptive norms** (impact that various social influencers such as family, friends, local leaders, Ministry of Health, community, religious leaders, healthcare providers, government, have on respondents' general attitudes towards COVID-19 vaccination) **injunctive norms** (influence of social environment opinions on decision to get the COVID-19 vaccine) and **influence by gatekeepers** (healthcare professional's recommendation of COVID-19 vaccination and preparedness to address concerns) were inquired.

- 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.

2.1.4 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.

2.1.5 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 to 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 being 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.**

2.2 Drivers of HCWs COVID-19 vaccination related behaviour

2.2.1 Vaccination behaviour

The vaccination behaviour of HCWs was evaluated in two aspects: **vaccination behaviour in the professional context** and **private vaccination behaviour**.¹ The professional context was assessed with a scale including items evaluating HCWs' vaccine promotion behavior (adherence to the prescribed vaccination, persuading patients to get the COVID-19 vaccine, providing additional information to hesitant patients, recommending the vaccine). In terms of the private vaccination behaviour, HCWs were evaluated by a single item assessing COVID-19 vaccination status, with following responses: 1) No/One dose (incomplete), 2) One or two doses (complete)², 3) Three and more doses.

- 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.

1 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.

2 People who were completely vaccinated with one or two doses depending on the type of 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.

2.2.2 Psychological drivers

Psychological drivers included perceived vaccine efficacy, perceived vaccine safety, perceived danger of disease and likelihood of infection, trust in societal factors (in political and health authorities, science, pharmaceutical companies), trust in information sources, COVID-19 conspiracy beliefs, perceived collective responsibility and motivation to advocate for vaccination.

- 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.

2.2.3 Sociological drivers

In terms of social influence, **descriptive norms** (perception of the family, friends, local leaders, Ministry of Health, community, religious leaders, healthcare providers, government towards COVID-19 vaccination), and **injunctive norms** (influence of social environment opinions on the decision to get the COVID-19 vaccine) were inquired.

- 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.

2.2.4 Environmental drivers

Environmental drivers included perception of lack of competence (when answering to patient question about the efficacy, quality and safety of vaccine), the communication environment (frequency of use of information sources) and perception of the system support (clear guidelines and recommendations from authorities on the administration of COVID-19 vaccine).

- 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.

2.2.5 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.**

3 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 effects³). 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)⁴ 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.⁵
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

3 Lewandowsky S, Schmid P, Habersaat KB, Nielsen SM, Seale H, Betsch C, Böhm R, Geiger M, Craig B, Sunstein C, Sah S. Lessons from COVID-19 for behavioural and communication interventions to enhance vaccine uptake. *Communications Psychology*. 2023 Nov 24;1(1):35.

4 Liao X, Lin M, Yang L, Cheung K, Zhang Q, Li Y, Hao C, Wang HH, Gao Y, Zhang DD, Molassiotis A. Community engagement in vaccination promotion: A systematic review and meta-analysis. *JMIR Public Health and Surveillance*. 2024 Feb 27.

5 Palombi L, Belknap J, Katras MJ, Anderson G. Community Forums to Address Vaccine Hesitancy: A Useful Tool for Meeting the Needs of Diverse Communities. *Innovations in Pharmacy*. 2023;14(1).

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 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)⁶.
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 employed⁷. 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,

6 Lewandowsky S, Schmid P, Habersaat KB, Nielsen SM, Seale H, Betsch C, Böhm R, Geiger M, Craig B, Sunstein C, Sah S. Lessons from COVID-19 for behavioural and communication interventions to enhance vaccine uptake. *Communications Psychology*. 2023 Nov 24;1(1):35.

7 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.

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.

Contact information:

**UNICEF Country Office
in the Republic of Moldova:**

Chişinău, 31 August 1989 Street, 131, MD-2012
chisinau@unicef.org

Angela Capcelea,
Health Specialist
acapcelea@unicef.org

Cristina Stratulat,
Social and Behavior Change Officer
cstratulat@unicef.org