

The Influence of Medical Students' Life Values on their Perception of Future Professional Activity during the Covid-19 Pandemic

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Abstract

This study aims to investigate life values of medical students in the context of COVID-19 pandemic restrictions and their impact on the perception of future professional activities. The study involved questioning 381 students from the 1st-3rd courses of Zhytomyr Medical Institute to test the significance of life values during the first and second waves of COVID-19. The impact of the pandemic on students' perceptions of life was investigated using several questionnaires. Participants' general values were measured with a short version of the Portrait Values Questionnaire. Clarity of self-concept was measured with a short scale of Self-Concept Clarity. Sense of meaning in life was measured with the ten-item Meaning of Life Scale and the Future Orientation Questionnaire. Statistical analysis of the study results was performed using IBM SPSS STATISTICS 21.0 software. The software was used to perform reliability analysis, descriptive statistics, Student's t-tests to compare the indicators between the first and second halves of the pandemic, and correlation for each table of predictors. The study's results indicate a statistically significant transformation in medical students' life values. Almost all values increased, except for Self-Transcendence, which remained high during the first and second waves of the pandemic. The students' views on the meaning of life, their self-esteem, and future professional orientation did not change significantly between the two waves of the pandemic. During both waves of the pandemic, self-transcendence, universalism, conservation, tradition, conformity, self-enhancement, achievement, openness to change, and self-direction were identified as important values for self-concept clarity, sense of life meaning, and future professional orientation. The values of "power" and "hedonism" did not have any impact on these indicators.

Keywords: students, values, future doctors, influence of pandemic, self-concept clarity, sense of life meaning, professional orientation.

INTRODUCTION

The spread of COVID-19 has forced the education system to transform into a distance learning format. Both instructors and students have faced multiple challenges associated with the organisation of the academic process, learning information transmission, delivery of lectures and sessions, and students' self-management skills (Jamaludin & Ibrahim, 2022). Distance learning is also technically problematic in terms of conducting lessons. Lacking the pre-knowledge of how to learn in a distance format, students may experience stressful conditions, which manifests in the absence of a positive environment during sessions (Abdulghani et al., 2020; Badea et al., 2022). However, at the same time, the distance learning process has a favourable effect as well, as it encourages students to develop their self-study (Sodeify et

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al., 2022). To facilitate the distance learning process, it is necessary to identify the most suitable resource which enables instructors to give their lessons; choose information presentation formats; decide on the tools for timely receiving of students' feedbacks (Lee et al., 2022).

History has shown that challenging circumstances often lead to change. In the field of medicine, this change is reflected in the transformation of scientific paradigms and the emergence of new methods for treating patients (Rose, 2020), as well as the development of innovative teaching tools for students (Drexler et al., 2020). Strategies for mitigating the consequences of the COVID-19 pandemic should be based on introducing new technologies into the healthcare system and ensuring an adequate number of qualified personnel (Bauchner & Sharfstein, 2020). The COVID-19 pandemic has elevated the social significance of the medical profession. However, it has also complicated the vocational training process for medical students, posing a significant practical and logistical challenge that requires an urgent solution. Therefore, investigating the effects of the COVID-19 pandemic on the psychological well-being of medical students is crucial for ensuring the future of healthcare with competent professionals (Cuschieri & Agius, 2020; Rose, 2020). The study's relevance lies in the need to examine the value orientations of medical students during the pandemic to ensure the quality of education during the transition to online learning and to engage future physicians in public health activities to combat the pandemic (Bauchner & Sharfstein, 2020).

LITERATURE REVIEW

The pandemic has had a significant impact on the well-being of medical students. It is important to develop an education system that provides opportunities to study despite external constraints. According to research, students reported emotional burnout, difficulties adapting to changes in education, and limited opportunities for face-to-face communication, not just digital communication. The study demonstrates a significant change in the significance of life values among medical students, aimed at promoting well-being and reducing stress caused by pandemic restrictions. Values have played an essential role in discussing various social and cultural phenomena for thousands of years. However, value theory was systematically studied and disseminated in psychology from the 1990s (Sagiv & Schwartz, 2022). Over the past three decades, there has been a growing body of psychological and educational research focusing on personal values, structure, and implications across many cultures. Overall, many scholarly opinions suggest that society is evolving toward a gradual decline in moral values (Visnovsky, 2017). Studies have shown that personal values can influence the career decisions of future doctors. For instance, Hojat et al. (1998) found that academically successful students tended to have more pronounced values of dominance over others and personal success. To facilitate shared reflection on personal values, Schwartz's theory can be a valuable framework for interprofessional education. In particular, Ardenghi et al. (2021) suggest that this theory can be applied in the medical field.

Ardenghi et al. (2023) also emphasizes the importance of forming and developing values such as empathy, which is important for the future professional activities of future doctors. Moyo et al. (2016) identified a set of personal and professional values of healthcare professionals based on the Schwartz model, the most important of which are altruism, justice and the ability to self-realisation.

To date, the theme of life potentials and human values has received a new impetus to development through the pandemic COVID-19, when most people in all countries of the world, including Ukraine, felt their uselessness, powerlessness, unclaimed in society (Sliusarevskyi, 2020). Many studies are conducted in countries where the mortality rate from COVID-19 is extremely high, especially in African countries, the Republic of India and the United States. The problem has also become urgent for Ukraine when the restrictions of rights and freedoms, mass vaccination of the population contributes to the development of negative public opinion, the emergence of the need to seek ways of protecting themselves.

The concept of "value" is debatable and ambiguous and is defined by several understanding vectors. First, value can be defined by the attitude to the phenomenon, object. In this case, the demonstration of this value clarifies that a

specific system element is more valuable than others. At the same time, there is another understanding of value as a belief based on the standards of morality, religious beliefs, etc. This belief sees value as the highest good to which one should aspire (Parsons, 1971). According to Parsons (1971), value is an element of the general symbolic system that serves as a standard for choosing possible behavior patterns in some situations. Furthermore, values are created by social institutions, which contribute to their dissemination among people. With the development of society, values and their integration change, as a result, there is a fluctuation in integrated values and value systems.

Modern foreign researchers focus on the influence of life values on the motivation necessary for self-regulation behavior (Ofstedal et al., 2010). With a cross-cultural perspective, research on personal matters is considered, organized and integrated, and it is pointed out that understanding personal values means understanding human behavior (Sagiv et al., 2017). Thus, practical studies of personal values are particularly important for shaping the theoretical aspects of life values and potentials in integrated social institutions.

The COVID-19 pandemic has had an unprecedented impact not only on health, but also on the quality of life of people around the world, increasing the likelihood of depressive disorders and changing the attitude towards health as a priority value (Nguyen et al., 2020). The stress hurts the mental state and quality of life of university students, their physical and mental health, causing insomnia and burnout (Ribeiro et al., 2018), emotional exhaustion of medical students (Boni et al., 2018). Researchers fear that the shift to online learning will reduce student acquisition of practical skills, clinical experience, the lack of which will reduce the competitiveness of young professionals and thus become a significant obstacle to the professional development of medical students and further building their careers (Ferrel & Ryan, 2020). The study of personal characteristics and value orientations of junior medical students is relevant for the development of preventive measures aimed at increasing motivation to study. This is due to the high risk of emotional burnout associated with a long stay in a situation of constant stress and uncertainty (Boni et al., 2018). Jhajj et al. (2022) highlighted the importance of providing effective strategies to enhance the mental health of students affected by the pandemic and to improve the quality of education. Educational institutions that prepare future healthcare professionals for the workplace should consider a curriculum approach that prioritizes student well-being (Klasen et al., 2023). Szemik et al. (2022) suggest that medical students' quality of life can be improved by a better financial situation, higher levels of physical activity, and overall health. They also recommend introducing the possibility of continuous learning to ensure the quality of education and well-being of medical students. Kerr et al. (2023) found that the pandemic has caused medical students to experience significant uncertainty about their professional skills and understanding of their role as future professionals. According to Ayubi et al. (2023) and Chakladar et al. (2022), students reported high levels of depression, anxiety, and uncertainty about the future. The pandemic has had a negative impact on medical students' education and well-being. Halfmann et al. (2024) found that female students experienced higher levels of anxiety than male students due to the pandemic. Harries et al. (2021) discovered that medical students were eager to return to practice as soon as possible, and that the pandemic had a moderate impact on their stress and anxiety levels. Nolan and Owen (2021) also demonstrated that students had positive impressions of direct patient care and were motivated for future practice.

Broks et al. (2022) investigated high levels of stress among medical students, particularly those with lower levels of social support. Miller et al. (2020) suggest that allowing students to volunteer to help treat patients during a pandemic, while taking measures to protect their health, reinforces important values such as altruism and solidarity with the profession. This can increase motivation to learn and reduce stress levels due to the pandemic. Bagby-Stone (2021) emphasized the significance of establishing an environment that maximizes student learning and minimizes stress.

Wu et al. (2021) demonstrated that certain human values, including empathy, have a positive impact on medical students' expectations of their profession. This effect is consistently mediated by resilience and subjective well-being. To establish professional values and improve students' expectations, it is important to consider factors such as the development of psychological resilience and cognitive abilities among medical students. Bolatov et al. (2022) also

confirm the importance of support from the educational establishment on the quality and satisfaction of medical students. This supports the objective evaluation that educational support is crucial for medical students' success.

Huang et al. (2022) conducted a study that demonstrates the significant impact of marital status on the life satisfaction of medical students in postgraduate education, as well as on depression during the pandemic. Klein and McCarthy (2022) investigated the positive effects of developing social support networks and hobbies, as well as enhancing teachers' professional knowledge and skills through distance learning, on reducing stress in medical students. During the pandemic, medical students can play a vital role in enhancing clinic operations. This can be achieved by collecting patient histories, documenting Covid-19 questions and visits, caring for patients with chronic conditions, curating media and social media content, and assisting physicians in non-clinical roles (without direct patient contact). Additionally, medical students can participate in teaching and research. It is important to note that these roles should be carried out objectively and without bias. Medical schools must prepare for the unique challenges and responsibilities they face during the pandemic (Patrinely et al., 2020; Servin-Rojas et al., 2022). Developing the values of future doctors is one way to improve the quality of education and motivation for self-study in online mode, which will incentivize a high level of competence and professionalism.

The study aims to investigate the characteristics of human values of medical students under the constraints of COVID-19 pandemic.

Research objectives:

- To analyze the sources of scientific literature on the problem of life-meaning orientations.
- To conduct an empirical study of the dynamics of ideas about life values and opportunities of medical students in a situation of uncertainty associated with the COVID-19 pandemic.

The study hypothesized that medical students' values influence the clarity of orientation to future professional activity.

MATERIALS AND METHODS

Research design

The following questionnaires were used to investigate the impact of the pandemic on some features of students' perceptions of life.

Participants' general values in life were measured using a short version of the Portrait Values Questionnaire (PVQ-21). Participants were presented with a verbal portrait describing the person, their goals and aspirations. Participants rated each portrait as similar to themselves in real life, using a visual analogue scale from 0 – "Not at all like me" to 100 – "Very similar to me". This questionnaire measures Schwartz's ten motivational and value orientations. These indicators have sufficient internal consistency (Schwartz, 2021). Before and after the quarantine, students were asked how they felt about certain values. The results are presented in the Table 1.

Clarity of self-concept – a short scale of self-concept clarity consists of 12 items that are answered on a 7-point Likert scale (1 – very inconsistent, 7 – very consistent). A higher score on the scale indicates a higher degree of self-concept clarity. The scale has positive reliability and validity, with a Cronbach's alpha of 0.78 in this study and a high in study Campbell et al. (1996). The results are presented in the Table 2.

Sense of meaning in life measured using the ten-item Meaning of Life scale, which includes two dimensions: presence and search. Among them, the sense of meaning focuses on the extent to which people understand and accept the meaning of life, while the search for meaning in life focuses on the person's desire to actively seek meaning. Students answered the questionnaire on a Likert scale (1 – very unlikely, 7 – very likely). Higher scores indicate a higher level of meaning in a person's life. It has been found to have positive reliability and validity, with Cronbach's alpha ranging from .86 to .88 for both subscales in the study by Rose et al. (2017). The results are presented in the Table 2.

The Future Orientation Questionnaire consists of 31 items and includes 3 dimensions: future cognition, future affect, and voluntary future actions. Participants answered the questions on a five-point Likert scale (1 – not at all, 5 – thoroughly). A higher score on the scale means a higher level of future orientation development. The scale has positive reliability and validity, with Cronbach’s alpha of 0.81 and the three dimensions of the scale having alphas of 0.78, 0.81, and 0.79, respectively (Steger & Shin, 2010). The results are presented in the Table 2.

The respondents were offered to answer the questions over a sequence of two months for tracing the changes in their attitudes in the framework of distance learning, predetermined by COVID-19. For receiving feedback from the respondents in the framework of the study, each student was given a registered e-mail account, for the avoidance of falsified results. The respondents were required to submit their answers 24 hours after they received a task.

Sample

In the framework of the study, 381 respondents were surveyed, selected by simple randomization among students of 1st–3rd courses of Zhytomyr Medical Institute. Among whom there were:

- 156 (40.9%) third-year students;
- 147 (38.6%) second-year students;
- 78 (20.5%) first-year students.

The study included 288 girls (75.6%) and 93 boys (24.4%). Only 1st-3rd year students were included in the sample, as undergraduates were excluded due to their exposure to other stressful situations such as extra examinations and internships. All participants were informed about the research program and provided their voluntary consent.

Statistical processing

Statistical processing and statistical analysis of the study results were performed using IBM SPSS STATISTICS 21.0 software (IBM SPSS Inc., Chicago, IL, USA), which performed reliability analysis, descriptive statistics, general method of analysis of variance, and correlation for each table of predictors. Student’s t-tests were calculated to compare the indicators between the first and second waves of the pandemic.

Ethical issues

Ethical issues in the research process were ensured by adherence to the principles of bioethics, such as tolerance, obtaining informed consent from respondents to participate in research, ensuring their anonymity through special encryption of questionnaires. No special funding was allocated for the study, there was no conflict of interest in its process. The ethical issues were observed in compliance with the Guidelines for Research Ethics in Science and Technology (“The National Committee for Research Ethics in Science and Technology”, 2016).

Research limitations

The study’s limitations are related to its focus on values of only junior medical students and the use of a single research methodology - a questionnaire developed by the authors. The sample of respondents presented may not be representative of the life-meaning orientations of all students in medical faculties, particularly junior students. It is possible that significantly different results could be obtained if senior students or students from other specialties were surveyed.

RESULTS

A survey was conducted to determine students’ values based on Schwartz’s Portrait of Values. The results are presented in Table 1. According to the results of the higher-order dimension of the questionnaire, students place great importance on caring for others and the environment. Compared to the first wave of the pandemic, there have been no

significant changes in the results during the second or third wave. However, compared to the results obtained during the first and second waves of the pandemic, the scores obtained for the values of “Preservation” and “Self-development” have significant differences ($p < 0.05$) when comparing. Students of the first wave of the pandemic outbreak scored higher on the Self-Assertion scale, indicating that they value their own success and competence more than dominance over others. The data on the Openness to Change scale show that students value the realization of their ideas and strive to live a full and interesting life, being open to new experiences. The value categories of Stimulation and Self-direction differ significantly between the results obtained during the first and second waves of the pandemic, which indicates the impact of quarantine conditions on these values of medical students.

[Table 1 near here]

The value of nature conservation increased significantly among students during the pandemic, as the results show ($p < 0.05$). This indicates an increased desire to preserve traditions and lifestyles in a certain way, as well as an unwillingness to make unfavorable changes, which is quite common during a pandemic.

At the same time, there has been a significant increase in the rate of self-improvement among students, possibly due to the recognition of the need to adapt to the pandemic conditions and develop personal skills. Additionally, there has been a notable increase in students’ willingness to embrace change. This indicates that they are receptive to change and willing to learn new methods of interaction, treatment options, and problem-solving strategies in response to the pandemic.

For an in-depth study of medical students’ views on life during the pandemic, their attitudes towards Self-Concept clarity, Sense of life meaning, Future professional orientation. The results are presented in Table 2.

[Table 2 near here]

The survey data show that the degree of students’ self-perception has not changed significantly due to the pandemic. Similarly, medical students’ sense of purpose and future orientation did not change significantly between the first and second waves of the pandemic. Thus, the pandemic conditions did not have a significant impact on these qualities in students which is a positive indicator of their choice of future profession.

The correlation analysis between the importance of life values, self-concept clarity, sense of life meaning, and future professional orientation during the first and second waves of the pandemic reveals that almost all indicators have correlations (refer to Table 3).

[Table 3 near here]

In particular, no correlations were found between the values of "benevolence" and "hedonism" and indicators of self-concept clarity. There were no correlations between the values “power” “hedonism” and indicators of the formation of student’s sense of life meaning and future professional orientation. There were positive correlations between other life values and indicators self-concept clarity, sense of life meaning and future orientation of medical students. During the second wave of the pandemic, there was no correlation found between the value of stimulation and self-concept clarity (Table 4). This may indicate a change in value “stimulation” for medical students as a result of the impact of the pandemic and its restrictions.

[Table 4 near here]

During the first and second waves of the pandemic there were low correlations found between the sense of life meaning and future orientation with the value “security”. This suggests that students may have felt the instability of various safety indicators that were previously considered safe before the pandemic, causing this value to lose its influence on the sense of life meaning. During the second wave of the pandemic, the indicators of self-enhancement value did not affect future professional orientation. There were no correlations found between the value’s “power” and “hedonism” and the indicators of self-concept clarity, sense of life meaning, and future professional orientation during both the first and second waves of the pandemic. During the two waves of the pandemic, the values that were undeniably important for

self-concept clarity, sense of life meaning, and future professional orientation were self-transcendence, universalism, conservation, tradition, conformity, self-enhancement, achievement, openness to change, and self-direction.

DISCUSSION

A questionnaire-based study was conducted to investigate the values of medical students during the pandemic. The results indicate that students rated the value category of “self-transcendence” the highest (80.05-81.52) during both the first and second waves of the pandemic. Notably, there was no significant change in students’ ratings of this value category throughout the pandemic. Conservation values increased significantly during the second wave of the pandemic ($p < 0.05$). Similar findings were reported in a study by Bonetto et al. (2021), so it is important for students to feel that a stable routine or way of life is maintained, as well as their family’s life, as various strong changes negatively affect psychological well-being. Burri (2021) describes the standard attitude towards life, where the value of life is justified by the human instinct for survival. The decline in family values in our study is linked to a particular stage in the development of the younger generation when they have left parental control but have not yet started a family of their own. Social distancing, like obeying norms and rules, much less sacrificing personal material possessions, is seen as altruism toward one’s fellow citizens (Bai, 2020; Johnson et al., 2020). According to Sliusarevskiy (2020), the first wave of the coronavirus was accompanied by a surge of phobias, anxiety, and worries about the unknown. There were no significant changes in the importance of self-transcendence, universalism, and benevolence values between the first and second waves of the pandemic. However, students rated other values as statistically more important during the second wave compared to the first. For example, students’ self-enhancement is significantly higher during the second wave of the pandemic ($p < 0.05$). This is due to the awareness of the need to adapt to the current living conditions and the realization that all people around the world are facing restrictions due to the pandemic, but not everyone can use difficulties to improve themselves. Therefore, students understand the need for self-improvement, despite the stress they experience. This is confirmed by the significant increase in students’ ratings of their readiness to change during the first and second waves of the pandemic. medical students pay attention to personal development and society (Zhurba, 2021).

Students’ ratings of qualities such as “clarity of self-concept”, “sense of purpose in life” and “future professional orientation” did not change significantly between the first and second waves of the pandemic. Several studies have demonstrated that pandemic-related restrictions have adversely affected students, leading to increased stress and anxiety (Abdulghani et al., 2020; Fila-Witecka et al., 2021). Similarly, to Wanigasooriya et al., (2021), a worldwide survey of medical students indicates that the pandemic has had a detrimental effect on their education.

In the context of the coronavirus, strict quarantine restrictions and maximum preparedness for contingencies, privacy remains a common value for young people, although its importance has declined. At the same time, the decline in the self-centeredness of young people in the second COVID-19 wave has had an impact on life values, but not in favor of humanity. A similar effect has been recorded in other international studies (Daniel et al., 2022; Lee et al., 2021). In comparison, in Poland, ensuring an effective state policy to protect citizens has changed the perception of life values towards altruism, social responsibility and social values (Bodarski, 2021).

At the same time, studies have shown that volunteering by older students has a positive impact on their psychological well-being and opens up new opportunities for student education during the pandemic (Drexler et al., 2020), and helps to develop the qualities necessary for the future work of a doctor (Sani et al., 2020). The challenges of the pandemic call for new teaching methods, and research shows that students are ready for change, so they can learn and use new digital tools to improve their skills during and after isolation.

Therefore, to mitigate the negative impact on the education of medical students and the quality of their training, it is necessary to develop and deepen their spiritual values. Additionally, it is important to create conditions that allow for positive coping with the effects of stress caused by pandemic restrictions. Furthermore, opportunities should be provided

for the development of work, study, and volunteering skills in various forms while ensuring the preservation of students' health.

The study examines the relationship between the assessment of important values and the level of self-concept, meaning of life, and future career guidance among students during the first and second waves of the pandemic. It demonstrates how the pandemic has helped students develop as individuals, become aware of the importance of their activities, and find meaning in life during crisis periods. This, in turn, helps them overcome stress and increases motivation to teach medical students during the pandemic and distance learning. In addition to this students need support from the teaching staff, high-quality classroom cooperation, and consideration and evaluation of certain teaching tools and methods used in distance education (Kapila et al., 2020). Meanwhile, Drexler et al. (2020) found that senior students who volunteer experience improved psychological well-being, gain new educational opportunities during the pandemic, and develop qualities essential for future medical work (Sani et al., 2020). Considering the challenges posed by the pandemic, it is imperative to adopt new educational practices. According to the survey, students are willing to embrace change and learn to use new digital tools to enhance their skills during and after the quarantine period. Students need support from teaching staff, high quality classroom collaboration and consideration and evaluation of specific distance learning tools and methods (Kapila et al., 2020).

This research has practical implications and could contribute to the fight against COVID-19 and other possible crises. It is important to consider the values of medical students in general, as their future professional activity involves working with people and demonstrating a high level of moral and human values. The mechanisms of human behavior can guide government agencies in solving social problems associated with the spread of the pandemic. As this study was conducted solely through a questionnaire and only reflects the impact of the uncertain situation associated with the COVID-19 pandemic on the human values of medical students, further research will be conducted among representatives of other specialties using valid psychodiagnostics methods to study the problem in depth.

CONCLUSIONS

Under normal conditions, the priority of young people's meaningful orientations in life is their personal life, which practically does not lose its leading value even in times of uncertainty. The main goal of young people is to realize their personal potential, which has led to an increased willingness to change between the first and second waves of the pandemic, as well as a higher level of self-direction.

The values of medical students were significantly affected by the uncertainty associated with the COVID-19 pandemic. A statistically significant change in medical students' life values was found for almost all values except self-transcendence, which was quite high during the first and second waves of the pandemic. Students value their success and competence more than the desire to dominate others. The peculiarities of the psyche of people who choose the medical profession can explain this. During the pandemic, the values of conservation and doubt increased significantly, indicating an increased desire to preserve traditions and lifestyles and an unwillingness to experience negative change. The ability to change has also increased significantly, which can be explained by the awareness of problems around the world and the need to adapt to these problems.

Students' views on the meaning of life, self-esteem, and future career orientation did not change significantly between the two waves of the pandemic. During the two waves of the pandemic, the values that were undeniably important for medical students' self-concept clarity, sense of life meaning, and future professional orientation were self-transcendence, universalism, conservation, tradition, conformity, self-enhancement, achievement, openness to change, and self-direction. No correlations were found between the hedonism value and the self-concept clarity, sense of life meaning, and future professional orientation indicators during the first and second waves of the pandemic. During the second wave of the pandemic, the influence of the self-enhancement value on future professional orientation was lost.

Practical implications

This research has practical implications and could contribute to the fight against COVID-19. The mechanisms of human behavior can guide government agencies in solving social problems. The work's practical relevance lies in the possibility of exploring the life values of medical students to understand the ability to perform under stressful conditions (such as a pandemic), and it has also allowed us to explore the important values of medical students in a pandemic in a general context.

Limitations

This study was conducted using a questionnaire and only reflects the impact of the situation of uncertainty associated with the COVID-19 pandemic on the values and self-concept clarity, sense of life meaning and future professional orientation of medical students.

Prospects for future research

Further research will be conducted among representatives of other specialties using validated diagnostic methods to investigate the dynamics of changes in the values of medical students in larger samples, as well as their impact on self-concept clarity, sense of life meaning, and future orientation. Future research should aim to combine qualitative and quantitative methods, taking into account the diverse contexts and peculiarities of students' education in various medical fields.

RECOMMENDATIONS

Education plays a significant role in students' life values development, because it stimulates their self-management, discipline and ability to work hard. In this paper, we have investigated the fundamentals of students' life values formation under pandemic conditions, which presupposed a distance learning format. The paper elaborates that medical students' life values have transformed during the distance learning period, resulting in the significance of tangible values and family. A further prospective study can be dedicated to comparing life values among the students of various medical specialties.

Ethics declarations

Ethics approval statement The study procedures were approved by the Bioethical Committee of the "Zhytomyr Medical Institute" Zhytomyr Regional Council and were in accordance with the 1964 Declaration of Helsinki and its subsequent revisions or comparable ethical standards.

Consent for publication Subjects provided consent to participate in the study.

Conflict of Interest The authors declare no competing interests

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AUTHORS CONTRIBUTED

Conceptualization, I.D. and S.K.; methodology, V.A.; writing—original draft preparation, S.H.; writing — review and editing, T.B. All authors have read and agreed to the published version of the manuscript.

REFERENCES

Abdulghani, H. M., Sattar, K., Ahmad, T., & Akram, A. (2020). Association of COVID-19 pandemic with undergraduate medical students' perceived stress and coping. *Psychology Research and Behavior Management, 13*, 871-881. <https://doi.org/10.2147/PRBM.S276938>

- Ardenghi, S., Luciani, M., Rampoldi, G., Ausili, D., Bani, M., Di Mauro, S., & Strepparava, M. G. (2021). Personal values among first-year medical and nursing students: A cross-sectional comparative study. *Nurse Education Today*, *100*, article number 104827. <https://doi.org/10.1016/j.nedt.2021.104827>
- Ardenghi, S., Rampoldi, G., Bani, M. & Strepparava, M. G. (2023). Personal values as early predictors of emotional and cognitive empathy among medical students. *Current Psychology*, *42*(1), 253-261. <https://doi.org/10.1007/s12144-021-01373-8>
- Ayubi, E., Bashirian, S., Jenabi, E., Barati, M., & Khazaei, S. (2023). Stress, anxiety and depression among medical students during COVID-19 pandemic: A systematic review and meta-analysis. *Personalized Medicine in Psychiatry*, *41*, article number 100108. <https://doi.org/10.1016/j.pmip.2023.100108>
- Badea, A., Paun, N., Fleseriu, C., & Paun, D. (2022). Changing times: The impact of digitalization on the behavior of professionals and their perception towards development. *Behavioral Sciences*, *12*(5), article number 139. <https://doi.org/10.3390/bs12050139>
- Bagby-Stone, S. (2021). Creating space for well-being in medical school and beyond. *Missouri Medicine*, *118*(1), 50-54. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7861606/>
- Bai, N. (2020, March 14). *Why experts are urging social distancing to combat coronavirus outbreak*. University of California San Francisco. <https://www.ucsf.edu/news/2020/03/416906/why-experts-are-urging-social-distancing-combat-coronavirus-outbreak>
- Bauchner, H., & Sharfstein, J. (2020). A bold response to the COVID-19 pandemic: Medical students, national service, and public health. *JAMA*, *323*(18), 1790-1791. <https://doi.org/10.1001/jama.2020.6166>
- Bodarski, R. (2021). Grown up in the face of values. The subjective dimension of shaping values in human life. *Studies on the Theory of Education*, *XII*(2(35)), 71-84. <http://dx.doi.org/10.5604/01.3001.0015.0450>
- Bolatov, A. K., Seisembekov, T. Z., Dauyenov, E., Zhorokpayeva, M. D., Smailova, D. S., & Pavalkis, D. (2022). Medical education during the coronavirus disease pandemic and students' mental health: A one-year follow-up. *Frontiers in Education*, *7*, article number 1025600. <https://doi.org/10.3389/educ.2022.1025600>
- Bonetto, E., Dezechache, G., Nugier, A., Inigo, M., Mathias, J.-D., Huet, S., Pellerin, N., Corman, M., Bertrand, P., Raufaste, E., Streith, M., Guimond, S., de la Sablonnière, R., & Dambun M. (2021). Basic human values during the COVID-19 outbreak, perceived threat and their relationships with compliance with movement restrictions and social distancing. *PloS ONE* *16*(6), article number e0253430. <https://doi.org/10.1371/journal.pone.0253430>
- Boni, R. A. dos S., Paiva, C. E., de Oliveira, M. A., Lucchetti, G., Fregnani, J. H. T. G., & Paiva, B. S. R. (2018). Burnout among medical students during the first years of undergraduate school: Prevalence and associated factors. *PloS One*, *13*(3), article number e0191746. <https://doi.org/10.1371/journal.pone.0191746>
- Broks, V. M. A., Stegers-Jager, K. M., van der Waal, J., van den Broek, W. W., & Woltman, A. M. (2022). Medical students' crisis-induced stress and the association with social support. *PLoS One*, *17*(12), e0278577. <https://doi.org/10.1371/journal.pone.0278577>
- Burri, S. (2021). The option value of life. *Economics & Philosophy*, *37*(1), 118-138. <https://doi.org/10.1017/S0266267120000061>
- Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavallee, L. F., & Lehman, D. R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology*, *70*(1), 141-156. <https://doi.org/10.1037/0022-3514.70.1.141>
- Chakladar, J., Diomino, A., Li, W. T., Tsai, J. C., Krishnan, A. R., Zou, A. E., Kharidia, K., Baig, F. A., Householder, S., Kuo, S. Z., Chandrasekar, S., Chang, E. Y., & Ongkeko, W. M. (2022). Medical student's perception of the COVID-19 pandemic effect on their education and well-being: A cross-sectional survey in the United States. *BMC Medical Education*, *22*, article number 149. <https://doi.org/10.1186/s12909-022-03197-x>

- Cuschieri, S., & Agius, J. C. (2020). Spotlight on the shift to remote anatomical teaching during Covid-19 pandemic: Perspectives and experiences from the University of Malta. *Anatomical sciences education*, 13(6), 67-679. <https://doi.org/10.1002/ase.2020>
- Daniel, E., Bardi, A., Fischer, R., Benish-Weisman, M., & Lee, J. A. (2022). Changes in personal values in pandemic times. *Social Psychological and Personality Science*, 13(2), 572-582. <http://dx.doi.org/10.1177/19485506211024026>
- Drexler, R., Hambrecht, J. M., & Oldhafer, K. J. (2020). Involvement of medical students during the coronavirus disease 2019 pandemic: A cross-sectional survey study. *Cureus*, 12(8), article number e10147. <https://doi.org/10.7759/cureus.10147>
- Ferrel, M. N., & Ryan, J. J. (2020). The impact of COVID-19 on medical education. *Cureus*, 12(3), article number e7492. <https://doi.org/10.7759/cureus.7492>
- Fila-Witecka, K., Senczyszyn, A., Kołodziejczyk, A., Ciułkiewicz, M., Maciaszek, J., Misiak, B., Szcześniak, D., & Rymaszewska, J. (2021). Lifestyle changes among polish university students during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 18(18), article number 9571. <https://doi.org/10.3390/ijerph18189571>
- Halfmann, M., Castioni, N., Wetzel, L., Koopmann, A., König, S., & Schmieder, A. (2024). Effects of the COVID-19 pandemic on the mental health of medical students and young physicians in Germany: Gender-specific results of an online survey. *Heliyon*, 10(1), e23727. <https://doi.org/10.1016/j.heliyon.2023.e23727>
- Harries, A. J., Lee, C., Jones, L., Rodriguez, R. M., Davis, J. A., Boysen-Osborn, M., Kashima, K. J., Krane, N. K., Rae, G., Kman, N., Langsfeld, J. M., & Juarez, M. (2021). Effects of the COVID-19 pandemic on medical students: A multicenter quantitative study. *BMC Medical Education*, 21, article number 14. <https://doi.org/10.1186/s12909-020-02462-1>
- Hojat, M., Brigham, T. P., Gottheil, E., Xu, G., Glaser, K., & Veloski, J. J. (1998). Medical students' personal values and their career choices a quarter-century later. *Psychological Reports*, 83(1), 243-248. <https://doi.org/10.2466/pr0.1998.83.1.243>
- Huang, Z., Zhang, L., Wang, J., Xu, L., Wang, T., Tang, Y., Li, Y., Guo, M., Xiong, Y., Wang, W., Yang, X., Yu, Y., & Lu, H. (2022). Family function and life satisfaction of postgraduate medical students during the COVID-19 pandemic: The mediating role of meaning in life and depression. *Heliyon*, 8(4), e09282. <https://doi.org/10.1016/j.heliyon.2022.e09282>
- Jamaludin, S. Y. N., & Ibrahim, M. S. (2022). Exploring preclinical medical students' reflections on their learning experience during the COVID-19 pandemic. *International Journal of Learning, Teaching and Educational Research*, 21(5), 46-63. <https://doi.org/10.26803/ijlter.21.5.3>
- Jhajj, S., Kaur, P., Jhajj, P., Ramadan, A., Jain, P., Upadhyay, S., & Jain R. (2022). Impact of Covid-19 on medical students around the globe. *Journal of Community Hospital Internal Medicine Perspectives*, 12(4) article number 1. <https://doi.org/10.55729/2000-9666.1082>
- Johnson, T., Dawes, C. T., Fowler, J. H., & Smirnov, O. (2020). Slowing COVID-19 transmission as a social dilemma: Lessons for government officials from interdisciplinary research on cooperation. *Journal of Behavioral Public Administration*, 3(1). <https://doi.org/10.30636/jbpa.31.150>
- Kapila, V., Corthals, S., Langhendries, L., Kapila, A. K., & Everaert, K. (2020). The importance of medical student perspectives on the impact of COVID-19. *British journal of surgery*, 107(10), e372–e373. <https://doi.org/10.1002/bjs.11808>
- Kerr, A. M., Spaeth, L. D., & Gerome, J. M. (2023). Medical students' stress and uncertainty during the COVID-19 pandemic. *Health Communication*, 38(10), 2247-2257. <https://doi.org/10.1080/10410236.2022.2062826>

- Klasen, J. M., Poljo, A., Sortino, R., Bogie, B. J. M., Schoenbaechler, Z., Meienberg, A., Nickel, C., Bingisser, R., & LaDonna, K.A. (2023). Medical students on the COVID-19 frontline: A qualitative investigation of experiences of relief, stress, and mental health. *Frontiers in Medicine*, *10*, article number 1249618. <https://doi.org/10.3389/fmed.2023.1249618>
- Klein, H. J., & McCarthy, S. M. (2022). Student wellness trends and interventions in medical education: A narrative review. *Humanities and Social Sciences Communications*, *9*, article number 92. <https://doi.org/10.1057/s41599-022-01105-8>
- Lee, J. A., Bardi, A., Daniel, E., Benish-Weisman, M., & Fischer, R. (2021, June 21). *Our research shows COVID has made Australians more conservative and care less about others*. The Conversation. <https://theconversation.com/our-research-shows-covid-has-made-australians-more-conservative-and-care-less-about-others-161500>
- Lee, J. X., Ahmad Azman, A. H., Ng, J. Y., & Ismail, N. A. S. (2022). Deciphering learning motivation in open distance learning towards sustainable medical education. *Sustainability*, *14*(8), article number 4497. <https://doi.org/10.3390/su14084497>
- Miller, D. G., Pierson, L., & Doernberg, S. (2020). The role of medical students during the COVID-19 pandemic. *Annals of Internal Medicine*, *173*(2), 145-146. <https://doi.org/10.7326/m20-1281>
- Moyo, M., Goodyear-Smith, F. A., Weller, J., Robb, G., & Shulruf, B. (2016). Healthcare practitioners' personal and professional values. *Advances in Health Sciences Education*, *21*(2), 257–286. <https://doi.org/10.1007/s10459-015-9626-9>
- Nguyen, H. C., Nguyen, M. H., Do, B. N., Tran, C. Q., Nguyen, T. T. P., Pham, K. M., Pham, L. V., Tran, K. V., Duong, T. T., Tran, T. V., Duong, T. H., Nguyen, T. T., Nguyen, Q. H., Hoang, T. M., Nguyen, K. T., Pham, T. T. M., Yang, S.-H., Chao, J. C.-J., & Duong, T. V. (2020). People with suspected COVID-19 symptoms were more likely depressed and had lower health-related quality of life: The potential benefit of health literacy. *Journal of Clinical Medicine*, *9*(4), article number 965. <https://doi.org/10.3390/jcm9040965>
- Nolan, H., & Owen, K. (2021). Qualitative exploration of medical student experiences during the Covid-19 pandemic: Implications for medical education. *BMC Medical Education*, *21*, article number 285. <https://doi.org/10.1186/s12909-021-02726-4>
- Oftedal, B., Karlsen, B., & Bru, E. (2010). Life values and self-regulation behaviours among adults with type 2 diabetes. *Journal of Clinical Nursing*, *19*(17-18), 2548-2556. <https://doi.org/10.1111/j.1365-2702.2010.03243.x>
- Parsons, T. (1971). *The system of modern societies*. Prentice-Hall. <http://socio.karazin.ua/resources/c60a814f860ae55f5c6ca11e8f81b216.pdf>
- Patrinely, J. R., Zakria, D., Berkowitz, S. T., Johnson, D. B., & Totten, D. J. (2020). COVID-19: The emerging role of medical student involvement. *Medical Science Educator*, *30*(4), 1641-1643. <https://doi.org/10.1007/s40670-020-01052-6>
- Ribeiro, Í. J. S., Pereira, R., Freire, I. V., de Oliveira, B. G., Casotti, C. A., & Boery, E. N. (2018). Stress and quality of life among university students: A systematic literature review. *Health Professions Education*, *4*(2), 70-77. <https://doi.org/10.1016/j.hpe.2017.03.002>
- Rose, L. M., Zask, A., & Burton, L. J. (2017). Psychometric properties of the Meaning in Life Questionnaire (MLQ) in a sample of Australian adolescents. *International Journal of Adolescence and Youth*, *22*(1), 68-77. <https://doi.org/10.1080/02673843.2015.1124791>
- Rose, S. (2020). Medical student education in the time of COVID-19. *JAMA*, *323*(21), 2131-2132. <https://doi.org/10.1001/jama.2020.5227>
- Sagiv, L., Roccas, S., Cieciuch, J., & Schwartz, S. H. (2017). Personal values in human life. *Nature Human Behaviour*, *1*(9), 630-639. <https://doi.org/10.1038/s41562-017-0185-3>

- Sagiv, L., & Schwartz, S. H. (2022). Personal values across cultures. *Annual Review of Psychology*, 73, 517-546. <https://doi.org/10.1146/annurev-psych-020821-125100>
- Sani, I., Hamza, Y., Chedid, Y., Amalendran, J., & Hamza, N. (2020). Understanding the consequence of COVID-19 on undergraduate medical education: Medical students' perspective. *Annals of Medicine and Surgery*, 58, 117-119. <https://doi.org/10.1016/j.amsu.2020.08.045>
- Schwartz, S. H. (2021). A repository of Schwartz value scales with instructions and an introduction. *Online Readings in Psychology and Culture*, 2(2). <https://doi.org/10.9707/2307-0919.1173>
- Servin-Rojas, M., Olivas-Martinez, A., Dithurbide-Hernandez, M., Chavez-Vela, J., Petricevich, V. L., García-Juárez, I., de Moraes, A. G., & Zendejas, B. (2022). Impact of the COVID-19 pandemic on the clinical training of last year medical students in Mexico: A cross-sectional nationwide study. *BMC Medical Education*, 22, article number 24. <https://doi.org/10.1186/s12909-021-03085-w>
- Sliusarevskiy, M. M. (2020). Dystantsiine zonduvannia suspilnoi svidomosti yak peredumova adekvatnoi vidpovidi psykhologichnoho spivtovarystva na vyklyky pandemii COVID-19 [Remote Sensing of Community Awareness as a Prerequisite for an Adequate Response Psychological Society Due to the COVID-19 Pandemic]. In M. M. Sliusarevskiy, L. A. Naidonova, O. L. Voznesenska (Eds.), *Dosvid perezhyvannia pandemii COVID-19: Dystantsiini psykhologichni doslidzhennia, dystantsiina psykhologichna pidtrymka [The Experience of Experiencing the COVID-19 Pandemic: Remote Psychological Research, Distance Psychological Support]* (pp. 65-70). Instytut Sotsialnoi ta Politychnoi Psykhologii NAPN Ukrainy. <http://doi.org/10.33120/QERPASProceeding-2020> (in Ukrainian)
- Sodeify, R., Habibpour, Z., & Akbarbegloo, M. (2022). Explaining medical students' perceptions of asynchronous virtual education in the COVID-19 pandemic: A qualitative study. *Journal of Education and Health Promotion*, 11, article number 143. https://doi.org/10.4103%2Fjehp.jehp_147_21
- Steger, M. F., & Shin, J. Y. (2010). The relevance of the meaning in life questionnaire to therapeutic practice: A look at the initial evidence. *International Forum on Logotherapy*, 33(2), 95-104. <https://psycnet.apa.org/record/2010-23577-005>
- Szemik, S., Gajda, M., Gładys, A., & Kowalska, M. (2022). The association between COVID-19 pandemic and the quality of life of medical students in Silesian voivodeship, Poland. *International Journal of Environmental Research and Public Health*, 19(19), article number 11888. <https://doi.org/10.3390/ijerph191911888>
- The National Committee for Research Ethics in Science and Technology. (2016). *Guidelines for research ethics in science and technology* (2nd ed.). The Norwegian National Research Ethics Committees. <https://www.forskningsetikk.no/en/guidelines/science-and-technology/guidelines-for-research-ethics-in-science-and-technology/>
- Visnovsky, E. (2017). On the value of human life. *Ethics & Bioethics*, 7(1-2), 85-95. <https://doi.org/10.1515/ebce-2017-0003>
- Wanigasooriya, K., Beedham, W., Laloo, R., Karri, R. S., Darr, A., Layton, G. R., Logan, P., Tan, Y., Mittapalli, D., Patel, T., Mishra, V. D., Odeh, O., Prakash, S., Elnoamany, S., Peddinti, S. R., Daketsey, E. A., Gadgil, S., Bouhuwaish, A. E. M., Ozair, A., Bansal, S., ... Ashpak, A. (2021). The perceived impact of the Covid-19 pandemic on medical student education and training – an international survey. *BMC Medical Education*, 21, article number 566. <https://doi.org/10.1186/s12909-021-02983-3>
- Wu, W., Qi, Q., Cao, X., Li, S., Guo, Z., Yu, L., Ma, X., Liu, Y., Liu, Z., You, X., Chen, Y., Long, Q., Teng, Z., & Zeng, Y. (2021). Relationship between medical students' empathy and occupation expectation: mediating roles of resilience and subjective well-being. *Frontiers in Psychology*, 12, article number 708342. <https://doi.org/10.3389/fpsyg.2021.708342>

Zhurba, K. O. (2021). Teenagers' meaning of life values: Theory and practice. *Pedagogics and Psychology*, 46(1), 132-139. <https://doi.org/10.51889/2021-1.2077-6861.18>

Table 1 Descriptive of the variables of Schwartz's motivational and value orientations of the students

	Values during the first wave of the pandemic			Values during the second wave of the pandemic			<i>t</i>	<i>p</i>
	Mean	SD	Cronbach alpha	Mean	SD	Cronbach alpha		
Self-Transcendence	80.05	11.52	0.71	81.52	13.85	0.68	0.887	>0.05
Universalism	82.05	10.25		82.67	10.52		0.747	>0.05
Benevolence	79.32	12.37	0.69	79.55	12.21	0.74	0.385	>0.05
Conservation	49.85	14.55		62.21	18.87		2.968	<0.05
Tradition	34.53	11.02		58.92	8.95		4.235	<0.05
Conformity	55.68	13.41		68.66	11.05		5.632	<0.05
Security	38.74	11.32	0.78	60.36	12.32	0.69	8.855	<0.05
Self-Enhancement	34.87	12.28		59.30	15.28		8.256	<0.05
Power	27.03	11.05		58.74	9.65		3.655	<0.05
Achievement	44.23	8.958	0.74	59.85	9.96	0.78	4.525	<0.05
Openness to change	55.35	14.15		69.74	18.95		2.035	<0.05
Hedonism	52.32	12.03		68.95	12.32		3.235	<0.05
Stimulation	56.35	10.36	0.78	73.35	10.85	0.78	3.382	<0.05
Self-direction	58.39	12.35		67.96	11.65		2.589	<0.05

Table 2 Results of a student survey on self-concept, meaning of life, future career guidance during the first and second waves of the pandemic

	During the first wave of the pandemic		During the second wave of the pandemic		<i>t</i>	<i>p</i>
	Mean	SD	Mean	SD		
Self-Concept clarity	2.74	0.25	2.77	1.21	0.568	>0.05
Sense of life meaning	4.87	1.02	4.95	0.98	0.655	>0.05
Future orientation	3.39	0.68	3.49	0.85	1.124	>0.05

Table 3 Correlations between life values and self-concept, meaning of life, future career guidance of medical students during the first wave of the pandemic

Indicators	Self-Concept clarity	Sense of life meaning	Future orientation
Self-Transcendence	0.65	0.71	0.68
Universalism	0.67	0.75	0.71
Benevolence	0.41	0.78	0.74
Conservation	0.74	0.69	0.68
Tradition	0.68	0.72	0.71
Conformity	0.65	0.74	0.63
Security	0.74	0.64	0.56
Self-Enhancement	0.70	0.77	0.81
Power	0.75	0.41	0.35
Achievement	0.74	0.70	0.69
Openness to change	0.69	0.69	0.74
Hedonism	0.48	0.35	0.38
Stimulation	0.63	0.67	0.68
Self-direction	0.88	0.65	0.73

Table 4 Correlations between life values and self-concept, meaning of life, future career guidance of medical students during the second wave of the pandemic

Indicators	Self-Concept clarity	Sense of life meaning	Future orientation
Self-Transcendence	0.67	0.71	0.77
Universalism	0.80	0.67	0.73
Benevolence	0.69	0.74	0.76
Conservation	0.71	0.69	0.65
Tradition	0.73	0.76	0.69
Conformity	0.78	0.68	0.65
Security	0.81	0.51	0.49
Self-Enhancement	0.80	0.78	0.50
Power	0.28	0.35	0.29
Achievement	0.69	0.68	0.74
Openness to change	0.81	0.68	0.68
Hedonism	0.29	0.41	0.35
Stimulation	0.38	0.64	0.69
Self-direction	0.79	0.71	0.72