BRATISLAVA INTERNATIONAL SCHOOL OF LIBERAL ARTS

Burning Firefighters?
Investigating Quality of Life Change Among Slovak Healthcare Professionals During the COVID-19 Pandemic

BACHELOR THESIS

Bratislava, 2023 **Štefan Vach**

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Declaration of Originality

I hereby declare that this bachelor's thesis is my own work and has not been published in part or in whole elsewhere. All used literature and other sources are attributed and cited in references.

In Bratislava, February 15, 2023 **Štefan Vach**

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Abstract

This thesis investigates the change in health-related quality of life (HRQoL) among Slovak healthcare professionals during the pandemic of COVID-19. Moreover, this paper also traces the possible correlated factors of the change in the health status of Slovak healthcare personnel. A survey and a series of interviews were conducted to answer the stated problems. The survey questionnaire consisted of two EQ-5D-5L type questionnaires, where the first was quiring about the pre-pandemic and the latter about current health status. In total, 254 healthcare professionals participated in the study. Semi-structured interviews with three experts were also conducted to explore the correlated factors with health status change. Analysis of the survey data proved a statistically significant change in the health-related quality of life of Slovak healthcare personnel. The most significant observable change was in the *pain or discomfort* dimension. Analysis of the interviews resulted in several possible correlated factors to the health status change. All three experts, in unison, identified the uncertainty in governmental pandemic measures, general administrative chaos, and the lack of clear communication from the authorities' side as possible causes of health status change. From a political point of view, this study stresses the government's need to ensure a dignified environment for its citizens.

Keywords: healthcare, quality-adjusted life year, health-related quality of life, dignity, liberal democracy

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Abstrakt

Táto práca sa zameriava na zmenu v kvalite života v zdraví (HRQoL) u slovenských zdravotníkov počas pandémie COVID-19. Skúmané sú aj možné korelačné faktory danej zmeny. Na dokázanie alebo vyvrátenie hypotéz bol uskutočnený prieskum a séria rozhovorov s odborníkmi. Prieskumný dotazník pozostával z dvoch formulárov typu EQ-5D-5L, pričom prvý sa dopytoval na zdravotnú situáciu spred pandémie a druhý na aktuálny zdravotný stav. Celkovo sa štúdie zúčastnilo 254 zdravotníckych pracovníkov. Súčasne boli realizované polo štruktúrované rozhovory s tromi odborníkmi s cieľom preskúmať faktory korelujúce so zmenou zdravotného stavu. Analýza údajov z prieskumu preukázala štatisticky významnú zmenu v kvalite života v zdraví pomedzi slovenským zdravotníckym personálom. Najvýznamnejšia pozorovateľná zmena bola v dimenzii bolesť alebo nepohodlie. Z analýzy rozhovorov vyplynulo niekoľko možných, so zistenou zmenou zdravotného stavu, korelujúcich faktorov. Všetci traja experti zhodne označili za možné príčiny zmeny zdravotného stavu neistotu vo vládnych protipandemických opatreniach, všeobecný administratívny chaos a nejasnú komunikáciu zo strany úradov. Z politického hľadiska táto štúdia zdôrazňuje potrebu vlády zabezpečiť dôstojné prostredie pre svojich občanov.

Kľúčové slová: zdravotníctvo, dĺžka života v štandardizovanej kvalite, kvalita života v zdraví, dôstojnosť, liberálna demokracia

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Introduction

The COVID-19 pandemic undoubtedly affected the quality of life of the general Slovak population. However, in each crisis, certain groups of people are always more prone to suffer. Especially those who fight the public threats springing from the crisis situation. When a fire breaks out, firefighters are always at the highest risk of being burned. But firefighters jump into burning houses only occasionally. Most healthcare professionals do not face a pandemic situation connected with restrictions on their freedom or an immense workload daily. Under normal circumstances, the majority of healthcare personnel do not constantly stay in such a "burning house" for months.

However, that precisely happened during the pandemic of COVID-19. The question is whether Slovak healthcare professionals suffered long-term negative consequences on their quality of life during their stay at the "burning house" for more than two years. Also, how much did their "scalds" cost, and what were their possible correlated factors?

In 2019, Slovakia ranked third worst among other EU countries in healthy life years expectancy at birth. Slovakia reached a score of 56,2 years, while the average of the EU is 62,59 years (ECHI Data Tool, 2022). Moreover, on March 2, 2021, Slovakia had 18,15 COVID-19 deaths per million people, which was then, globally, the worst score. Europe had an average of 4,19 deaths, Germany had 3,68 deaths, and Denmark had 0,58 deaths (Our World in Data, n.d.). Slovakia also needed more healthcare professionals; in 2019, it equaled a shortage of 12.2% among doctors and 9% among nurses (Mathia, 2021).

Pažitný et al. (2022) emphasize that one of the crucial factors causing the mortality rate to rise during the third COVID-19 wave in Slovakia was the acute shortage of healthcare professionals. It may be unreasonable to blame healthcare personnel for these statistics. According to Pažitný et al. (2020), the Slovak government's suboptimal performance led to 18 476 potentially unnecessary deaths due to COVID-19.

The quality of life significantly during the pandemic (Zerbini et al., 2020). This finding led to similar research in Slovakia since similar findings could help trace the causes of Slovakia's uncommendable performance during the pandemic.

Moreover, Slovakia is a liberal democracy with implemented social policy. In such a country, the government should provide its citizens with opportunities to fulfil their needs (Nussbaum, 2000). For this reason, the dignity and quality of life were threatened.

This study aims to add to the body of research focusing on factors causing changes in health-related quality of life during the pandemic. To the author´s knowledge and research, no similar research has yet been conducted on Slovak healthcare professionals. The central assumption is that during the pandemic of COVID-19, the health-related quality of life of Slovak healthcare workers deteriorated. Moreover, it could be correlated to increased work strain, a constant situation of emergency, lack of free time, higher risk of containing COVID-19, or the public attitude towards pandemic measures.

On the other hand, this research will calculate the value of quality-adjusted life-year losses in healthcare workers to illustrate the difference between the one-time governmental subsidy and the actual financial value lost. Personal losses from the perspective of healthcare workers will be the primary focus.

Chapter 1: Theory

This chapter elaborates on the essential concepts of this thesis, such as quality of life (QoL), health-related quality of life (HRQoL), quality-adjusted life years (QALY), QALY threshold, and more. After a descriptive approach to the concepts, their implications for this thesis are introduced.

1.1 Quality of Life

To deconstruct the phrase, the first word - "quality," might be the easier of the two. This concept refers to a degree in which life is enjoyable. However, "life" is a term that might be looked upon from many different points of view. Furthermore, when put into the phrase "quality of life", in academic literature, alternative meanings start to arise. While this concept generally refers to an individual´s living experience, external and environmental factors, inter-subjective and subjective perspectives - all play a role in evaluating the quality of life (Ruta et al., 2007).

The concept's roots also emerged in ancient Greek philosophy, for instance, when Plato contemplated the problematics of a good life or when Aristotle elaborated on "eudemonia." The intrinsic distinction between "eudemonia" and "hedonia" might provide fundamentals for understanding different approaches to objectivize "quality of life." The latter refers to bodily pleasures, which are experienced after basic needs are met. The intensity or frequency of their fulfillment could be more easily measured than the eudemonic parameters. To clarify, achieving eudemonia is to lead life towards "telos" ("human flourishing," true happiness) (WHOQOL Group. 1993, as cited in Ruta et al., 2007, p. 401). To do so, an individual can work on using more of their potential through "purposeful activity" or having strong value integrity, being autonomous or internally motivated (Ryan & Deci, 2001, as cited in Ruta et al., 2007).

One of the notable attempts to define "quality of life" is that of Ruta et al. (2007). Firstly, they introduce to the reader the fact that there is "little cross-disciplinary consensus on definitions" in various phrases referring to wellbeing, such as "happiness," "utility," or "quality of life" (p. 399). The main focus of Ruta et al. (2007) is put on the work and ideas of Amartya Sen, whose academically recognized insights criticize broadly accepted notions around the quality of life. This concept helps Ruta et al. in developing their solid definition. Moreover, Sen presents a framework of functionings and capabilities to evaluate the quality of life (Ruta et al., 2007). Functionings is a broad term representing options that a person has when deciding what to do or what to be. Socially valuable functionings determine an individual´s wellbeing and capability is the freedom of choice from available options (Sen, 1993).

Furthermore, Ruta et al. (2007) provide a general model that considers various approaches to wellbeing. Consequently, their model might be understood as Maslow´s pyramid of needs in dynamics combined with Sen´s (1993) suggestions regarding functionings and capabilities. The first condition for wellbeing is a variable named “goods & commodities,” meaning the presence or absence of sources such as money, shelter, or people. Afterward, commodities acquire the potential of becoming “functionings” by being utilized. Consequently, the potential is attempted to be fulfilled, but the presumably limited number of capabilities (abilities to perform utilization) create a necessary gap between “expected capability” and “capability reality” (Ruta et al., 2007, p. 403). It should be precisely this gap that determines the level of quality of life. Among factors that hamper this level, authors mention instances of the “loss of a human relationship,” “neuroticism,” “chronic pain,” and “depression (loss of meaning, social contact)” (p. 416).

1.2 Quality of Life and Dignity

In a liberal democracy, the question of dignity might make sense in light of the commonly shared pool of capabilities that condition the quality of life. Claassen et al. (2014) focused on Nussbaum's (1990) & Sen´s (1993) concept of capabilities and functionings and their basic mechanisms. Consequently, they critically evaluated the relationship between Nussbaum´s position on dignity in capabilities. Claassen et al. (2014) shortly summarize that capabilities are "freedoms to achieve something and functionings are these achievements." Therefore, having a capability means possessing the potential to act in / be of a certain way, and functioning is the final exercise of such capacity.

Furthermore, Claassen et al. (2014) analyze Nussbaum´s concept of capabilities approach in its philosophical application to the idea of a just society. The main thought shaping the argument is that the government should create an environment where its citizens have the basic capabilities without any forced functionings (only exceptionally when the government needs to act paternalistically, Nussbaum 2000). According to Claassen et al. (2014), the capability approach also presents an intense competition for utilitarianism and resources. The latter praises equal distribution of resources, but this approach may fail to achieve the goal of satisfying the highest possible number of people since individuals demand specific amounts of resources to achieve the same level of utility (Sen, 1990, as cited in Claassen, 2014). Claassen et al. (2014) claim that a society that could be attributed as just cannot be held liable for not making people happy (thus achieving a specific functioning) but only for not providing its population the opportunities to achieve happiness (p. 241). Consequently, what begs to be introduced is the question, asking whether the government should secure basic capabilities.

This is when Claassen et al. (2014) introduce Nussbaum´s position on the question of dignity from the capability approach. Nussbaum (2006) believes that the main idea of capability theory is that everybody should respect the right of others to live a dignified life. Dignity is, according to Nussbaum, built upon three pillars; respect, agency & equality. Connecting these three concepts should lead to a clearer idea of

dignity. Furthermore, Nussbaum (2008) was aware that the main idea of dignity in the capability approach is abstract. Therefore, she dove into philosophy for help. A problem with dignity in Stoicism is that it tries to disconnect dignity from external factors (Claassen et al., 2014). The position of this philosophy is that dignity cannot be taken away by enslaving or impoverishment since it is only dependent on the internal setting of its beholder. Nussbaum (2008) contradicts this position and uses an Aristotelian-Marxian alternative, which argues that humans are "vulnerable and needy beings" (Claassen et al., 2014, p. 244). Moreover, Claassen et al. believe that Nussbaum´s concept of dignity fulfills three roles; potentiality (to develop specific capabilities), respect (to not violate the realization of other people´s potential) & human rights (protection from violation, which needs to be introduced by politics) (p. 244).

Extracted main findings in this paper might be that the capability approach invented by Sen (1993) & Nussbaum (1990) might be a solid foundation for evaluating the quality of life. Moreover, having a quality life might be a question of human rights and dignity, as Nussbaum (2008) claims. Fully applying Marxism in this case, providing all possible capabilities from common resources might be a bit far-fetched. Still, a modern liberal democracy with implemented social security, such as Slovakia, should reconsider whether one of its main goals is to provide its citizens an opportunity for a dignified life. Moreover, Nussbaum´s (2006) three main pillars of dignity, respect, agency, and equality may have been shaken during the pandemic, especially in the healthcare professional population.

1.3 Health-related Quality of Life (HRQoL)

Health-related quality of life plays a critical role in this thesis, but the term should be explained since it is often differently perceived. In politics or sociology, the concept of wellbeing, or subjective wellbeing, is interchangeable with quality of life since both focus on the same issue – they indicate the level of happiness, satisfaction, or fulfillment. Some of the indexes measuring well-being focus only on the higher levels of needs, such as fulfillment or motivation, while others focus on the more basic predispositions for happiness, such as health, safety, or economic situation. Therefore, there should be made a clear description of what is meant by quality of life in this thesis.

Consequently, it is crucial to note that this thesis focuses on the clinical use of the term quality of life. Therefore, the measurement will focus mainly on symptoms of health-related issues.

Health Status Index is claimed by the authors (Karimi & Brazier, 2016) to primarily measure the ability of an individual to function optimally rather than to compare or evaluate the socially-adjusted average level of mental and bodily wellbeing. This index is convenient and focuses mainly on health-related aspects of an individual´s life. On the other hand, Quality of Life (QoL) is a complex term that has, according to Karimi & Brazier (2016), a comprehensive spectrum of definitions and factors influencing the final value. Some descriptions of the term focus more on the rational evaluation of individuals' life satisfaction. At the same time, others invite to the definition also the aspect of the cultural and social environment – values, norms, relationships, and similarly.

According to Karimi & Brazier (2016), health-related quality of life (HRQoL) nowadays has four different formulations. The first one is a combination of health-status index (HIS) and Quality of Life (QoL), the ability to function optimally and satisfaction within the environmental context. The second one is stricter and focuses only on the health-related aspect of quality of life (QoL). The third understanding of health-related quality of life (HRQoL) evaluates the variables of quality of life (QoL), which are dependent on health outcomes. Furthermore, finally, the fourth definition

describes health-related quality of life (HRQoL) as a practical tool used to measure the value of certain health levels according to disease and the cost of the treatment through quality-adjusted life years (QALY) calculations. The last approach has been chosen also in this thesis, since it seems to provide the best utilizable tool for reliable and repeatable research.

Karimi & Brazier (2016) argue that the differences between health status and quality of life are apparent, but distinguishing these two from health-related quality of life (HRQoL) is more challenging. At the end of the authors´ elaboration on this problem, it might be claimed that health-related quality of life (HRQoL) measures more the health status than the level of quality of life (QoL), but it still is an essential factor influencing the quality of life.

Further utilized in this thesis is the quality-adjusted life-years, a value consisting of two variables; quality of life and quantity of life. The part concerning "quality" is often measured by established and standardized HRQoL questionnaires (e.g., EQ-5D-5L), but QALY, as such, might use other ways of assessing this value. Nevertheless, in order to understand the utilization of HRQoL, QALY´s development over time will be introduced.

As argued in Sassi (2006), the term quality-adjusted life year (QALY) was initially utilized in 1976 by Zeckhauser and Shepard (1976) in order to point to the problematics and a solution of evaluating health outcome measurement unit that combines duration and quality of life. Sassi (2006) describes that the index was first created to evaluate the utility of disease treatment. Throughout the following years after the index was established, there was an extensive debate around its reliability and conditions under which it is of validity to use such an index. In the 90s, its function settled to be a generally accepted indicator used in cost-effectiveness analysis. Sassy (2006) also notes that QALY is nowadays used in most economically oriented decision-making evaluations in the healthcare field all around the world.

In the process of deciding whether or not to save the patient in poor condition with gloomy prospects for the future and costly treatment, QALY calculations are used in order to evaluate the quality and quantity of years ahead of the sufferer. When the

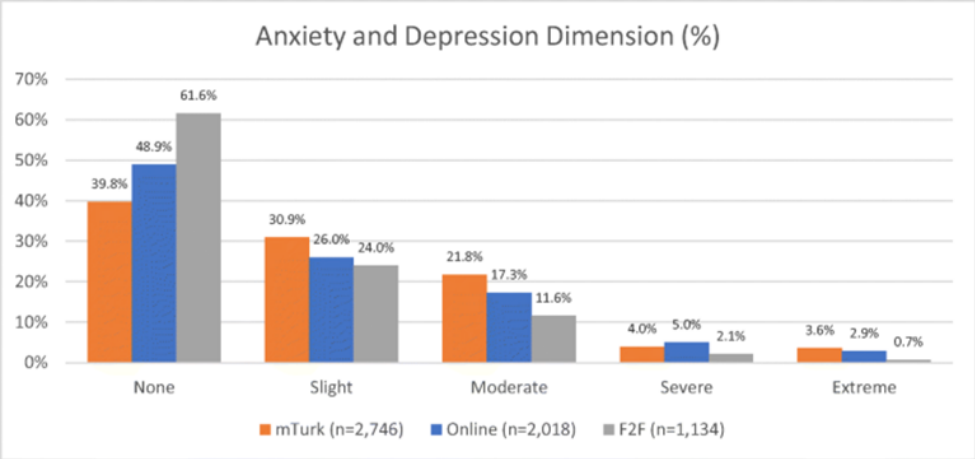
possible prospect of QALY score elevation is low enough, the patient won´t be given the best possible and available therapy since resources are limited and could be used for increasing QALY by higher numbers in other patients (Whitehead & Ali, 2010). This does not point to how QALY measurements will be used in this concrete thesis but rather gives a broader perspective on the utility of this tool.

As a recent practical example from the Slovak environment, Babela et al. (2021) explored the actual economic costs (in the public finances of Slovakia) of curing multiple myeloma, a type of plasma cell cancer. This study mapped the costs, including productivity loss, costs of medical care, and drugs or sickness benefits. The existence and necessity of such studies is a proof that the actual expenses are high since the final cost of curing a patient with multiple myeloma in Slovakia was a little more than 409 000 € in 2017 (Babela et al., 2018, p.458).

1.4 Health-related Quality of Life Decrease due to COVID-19 Pandemic

Hay et al. (2021) set for themselves a goal to investigate the impact of COVID-19 pandemic on the residents of the United States. Using the same method as this thesis utilizes – EQ-5D-5L questionnaires, the authors firstly emphasize the robust scientific evidence for symptoms of mental health issues among the U.S. population during the pandemic of COVID-19. According to the authors, "a simple PubMed search of "covid 19 depression" yields 1457 results", in which numerous indicators of mental health issues manifest themselves (Hay et al., 2021, para. 1). Moreover, the authors also note that among studies measuring health-related quality of life (HRQoL) in several other countries, the overall results tend to prove overall worsening in the health-related quality of life, especially in anxiety and depression. After comparing to pre-pandemic datasets, Hay et al. (2021) found a significant negative change in the health-related quality of life (HRQoL) score among population in 18-24 age group. Significant negative changes were also observed in 25-34 age group, but in in 35-64 age groups the differences were negligible, or even more positive. Moreover, age group of 65+ showed "nearly identical" utility values (para. 15). In Figure 1, Hay et al. (2021) illustrate the difference between mTurk data (gathered by the authors) and normal pre-pandemic scores from Online and F2F (Face to Face) forms.

Figure 1. Anxiety/depression Dimension of the Health-related Quality of Life graph.



Note. From *A US population health survey on the impact of COVID-19 using the EQ-5D-5L* by Joe W. Hay et al., 2021, *Journal of general internal medicine,* https://link.springer.com/article/10.1007/s11606-021-06674-z#ref-CR14

Hay et al. (2021) add to the great amount of research on health-related quality of life (HRQoL) decrease during the pandemic of COVID-19. They, however, also found that the decrease is age-specific and mostly manifest itself in the anxiety/depression category. This thesis aims at the possible health-related quality of life (HRQoL) change among Slovak healthcare personnel, who are, however, ageing (Páleník, 2021) and face more adverse consequences of COVID-19 pandemic while fighting in the first line.

Two studies by Basu & Gandhay (2021) and Martin et al. (2021) focus on the same problematics – health-related quality of life (HRQoL) decrease due to COVID-19 in general population were also conducted in the United States. The model of the first one was more theoretical and used more variables, such as the reproductive number of COVID-19 transmission or the whether or not the respondents were vaccinated. The two studies, the one by Martin et al. (2021) and by Basu & Gandhay (2021), vary rather significantly in the probability of patients suffering permanent kidney damage and in the utility loss. However, their assessments of quality-adjusted life years (QALY) decrease vary less, mainly in symptomatic hospitalized patients. Moreover, all deviations should be even more minor, since the study of Martin et al. (2021) focused on a 1-10 years horizon, whereas Basu & Gandhay (2021) adjusted calculations to their current situation. Consequently, it might be justly claimed that there is a growing body of research proving that COVID-19 infection negatively impacts quality-adjusted life years (QALY) score.

1.5 Health-related Quality of Life Decrease due to Work Stressors

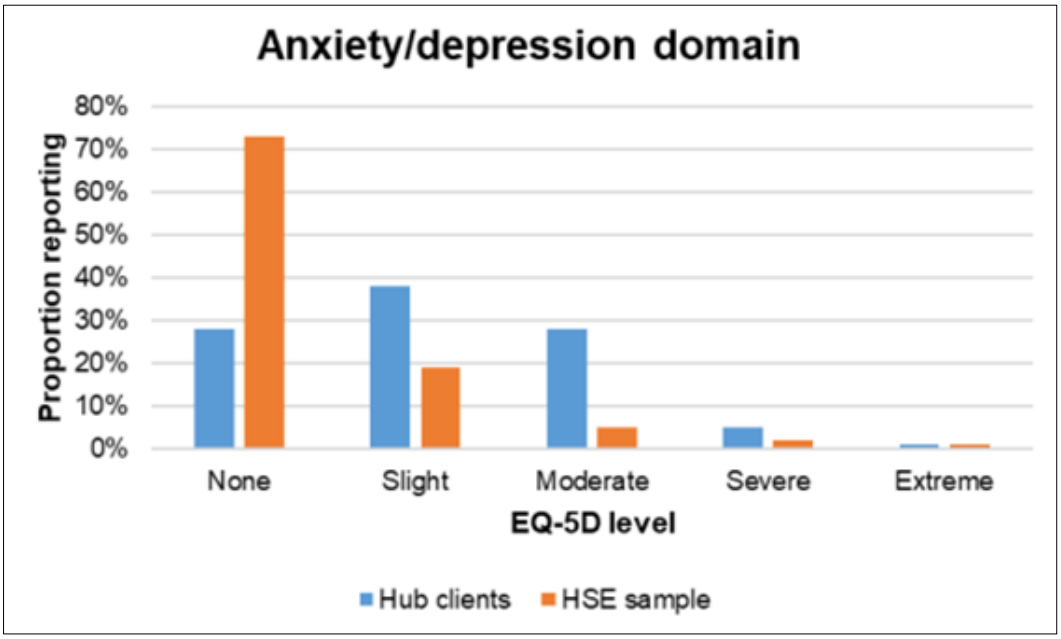
Regarding the possible correlated factors behind quality-adjusted life years (QALY) decrease, Hidaka et al. (2021) conducted a study of Japanese population to map the connection between work-related stressors and quality-adjusted life years (QALY). Furthermore, they also estimated quality-adjusted life years (QALY) loss by each individual stressors. In some of them, strong positive or negative links have been found. Hidaka et al. (2021) collected their data during a 2-year cohort study consisting of 3 waves to provide insight into the development with a retrospective point of view. As in the two previously presented studies in subchapter 1.4, Hidaka et al. (2021) also used a standardized method of assessing the health-related quality of life score, the same that this thesis utilizes.

Job strain and effort/reward imbalance were found to remarkably negatively influence the level of quality-adjusted life years (QALY) of Japanese workers, while quality-adjusted life years (QALY) score has been found to be positively connected with coworker support (Hidaka et al., 2021). Such findings point to the significance of stressors present in the healthcare workplace during the pandemic crisis. Since workload of Slovak healthcare professionals increased during the pandemic of COVID-19 (Pažitný et al., 2022), it is possible that job strain and effort/reward ratio are present problems in Slovakia as well. Furthermore, the coworker support variable may have influenced the quality-adjusted life years (QALY) score of Slovak healthcare workers, since one of the problems of the Slovak healthcare system was the risk of collapse due to the lack of workforce (Pažitný et al., 2022). In such pressing situations, it is presumed that stress factors in the workplace highlight themselves.

1.6 Health-related Quality of Life Decrease among Healthcare Workers during COVID-19 Pandemic

Shields et al. (n.d.) explored the direct impact of the COVID-19 pandemic on healthcare workers' mental health. The authors used a comparative research method of two different samples of the healthcare personnel population. The National Healthcare Service (NHL) urgently called for immediate action to help struggling healthcare workers and social care personnel fight the difficulties connected with the workload during the COVID-19 pandemic. The first dataset was extracted from a pre-pandemic survey and the second sample consisted participants who reached for help in 4 Resilience Hubs – institutions supporting healthcare staff with mental or other difficulties. However, this dataset only included yet filtered participants on domains such as general population norms, mental health conditions, or the group of specific key workers (Shields et al., n.d.). The health status measurement used the same questionnaire as in the practical part of this thesis. Even though this paper is framed by the authors merely as an exploratory analysis, the results showed significant deterioration in each measured dimension, with the most severe negative changes in mental health.

Figure 2. Anxiety and Depression Dimension of British Healthcare Professionals



Note. From *Key worker health status pre- and during the COVID-19 pandemic: an explorative analysis using the EQ-5D-5L* by Shields et al., n.d. Hub clients represent the participants who filled out the questionnaire during the pandemic crisis. HSE sample are participants from pre-pandemic period. During the pandemic, less healthcare professionals reported no anxiety/repression, the distribution of answers changed negatively

According to Zerbini et al. (2020) it is crucial to map the psychological burden of healthcare professionals during the pandemic of COVID-19 and understand its sources to prevent or minimize long-term negative consequences on mental health. Wu et al. (2009) found that short-term measures utilized to limit the spread of the SARS virus had aftermath manifesting in post-traumatic symptoms in healthcare workers for a long time. Since the COVID-19 pandemic posed a similar situation, such drawbacks would probably emerge. For those reasons, Zerbini et al. (2020) conducted a study through a survey, which had the goal of exploring the mental health consequences of healthcare professionals fighting in the first line against the pandemic adversities. The authors compared results from questionnaires of healthcare personnel working on COVID-19 wards and those working in the regular regime.

Moreover, Zerbini et al. (2020) focused on differences in results between nurses and physicians. In the end, all groups of participants who feared infection had increased levels of depression, anxiety, and stress subscales. Moreover, those who reported experiencing higher stress levels at the workplace had increased burnout and psychological strain symptoms. When comparing the two groups of participants, personnel from COVID-19 wards and those from regular wards, Zerbini et al. found no relevant difference in the categories “stress at work” and “fear of infection.” Significant findings were that nurses working at special wards experienced “higher levels of depressive mood,” exhaustion, and lower levels of fulfillment (Zerbini et al., 2020, p. 6). Interestingly, physicians working at different types of wards showed no significant change in these categories.

1.7 Monetizing quality-adjusted life-years (QALY)

One approach of monetizing quality-adjusted life years (QALY) is called WTP; a society´s willingness to pay for 1 quality-adjusted life year (QALY). Neumann et al. (2014) questioned the broadly used quality-adjusted life years (QALY) threshold value of 50 000 $ in the United States and investigated its origins and legitimacy. QALY threshold is the financial value of one year lived in best possible quality. They found a general vagueness around the amount since it was first mentioned in the 1970s in a cost-and-benefit analysis of patients in need of dialysis in end-stage renal disease. The value was afterward not inflation adjusted and was presumed to be somewhat of a threshold, and interestingly, its legitimacy was supported by many scientific articles where the range moved between 20 000 $ and 100 000 $. The society´s willingness to pay (WTP) approach is described by Neumann et al. (2014) as a theoretical model where people estimate how much they would pay for an improvement in their health. Let us say that all costs of all interventions could be evaluated in an approximately similar manner and ranked by their cost-effectiveness ratio. Following this, a government (or another institution authorized to redistribute finances in healthcare) working with limited resources could start paying for interventions from the top to the bottom of the list. The last item that could be paid for would represent the quality-adjusted life years (QALY) threshold assessed by the willingness to pay in that given society.

For a broader background information, it might be useful to include the study of Mason et al. (2009), which provides two separate models for calculating the financial value of quality-adjusted life years (QALY). The first one was modeled with the “value of preventing a statistical fatality” (VPF), which is very similar to the “value of statistical life” / “VSL” in some regards. In this first model, the value of every future year is of equal value. The second model consists of two sub-models, which are calculated with the change of VPF with age, where the curve has a U-shape, peaking at middle age. The methodology and outcomes of this study prove the possibility of translating the quality-adjusted life years (QALY) score into money. However, such an approach might have several downsides since both the value of statistical life and

quality-adjusted life years (QALY) are subjectively evaluated indicators, and the combination of them might not serve as a reliable value.

Neumann et al. (2014), describe another alternative in the threshold assessment, offering a value in the interval of 200 000 $ to 300 000 $. Such height is based on a general increase in healthcare spending combined with an increase in general health due to the spending rise, outcomes of willingness to pay (WTP) questionnaires, or a value of statistical life data focusing on the margin salary between differently risky job positions. However, every approach seems to produce results that are at least a few times higher than the value of 50 000 $.

Consequently, Neumann et al. (2014) conclude that there should be several thresholds for different situations regarding, for instance, state budget and alternative utilization of scarce resources. The authors also encourage policymakers and analysts to focus the majority of the finances on treatments with costs below the upper limit and to save finances for exemptional and very financially demanding cases. Therefore, the overall health of the population can benefit the most.

For the purposes of this study, a more plausible approach of monetizing quality-adjusted life years is utilized. It is similar to a concept, which is based on a recommendation from World Health Organization, where the authors claim “plausible assumption” about values and risk-related stances in a given society. The upper limit for one quality-adjusted life year (QALY) should be the national income per capita multiplied two to three times. Therefore, in 2014 in the U.S. the threshold for quality-adjusted life years (QALY) would be “110 000 $ to 160 000 $” (Neumann et al., 2014, p.796), which is notably more than the broadly used value of 50 000 $.

1.8 Slovak healthcare during the pandemic of COVID-19

Pažitný & Zajac (2021), in one of their chapters, elaborated on the success of the Slovak Republic in managing the pandemic crisis.

Waves of COVID-19 infections according to Pažitný & Zajac (2021):

- 1st wave March..... 2020----- June..... 2020
- 2nd wave September.. 2020----- November 2020
- 3rd wave December... 2020----- May..... 2021

They note that the first wave of infections was very positive – not in the sense of the number of COVID-19 testing, but in the general metrics measuring the severity of outcomes on the health of the population; a number of infected people, number of causalities (which was in Slovakia counted merely in tens). In the second wave, as the authors believe, situation in the Slovak Republic was neutral and not critical – similar to the rest of Europe. However, the third wave brought about unpleasant news – Slovak Republic, Czech Republic, and Hungary showed the worst results when compared to other European countries.

Pažitný & Zajac (2021) identified several likely causes of these outcomes, both in faulty management of the crisis by the government of Igor Matovič as the prime minister and also in long-term systemic issues of Slovak healthcare (p. 32). For the purposes of this study, only the latter will be mentioned. One of the most important systemic issues was, as the authors note, communication (or rather the lack of it) between general practitioners and patients (Pažitný & Zajac, 2021). Infected people suffering severe course of the disease oftentimes came to the hospitals when it was already too late. Pažitný & Zajac (2021) wrote that it was a standard, that in hospitals, the mortality of admitted patients reached 30%. The primary variable determining the success of individual hospitals in saving patients, the authors propose the quality of intensive care in the specific healthcare facility. The secondary cause was the capacity of transport since most of the patients preferred ambulances to private transport.

Another paper by Pažitný et al. (2022) mapped the excess mortality and its causes in Slovakia during the pandemic of COVID-19. The authors also focused on

individual waves of infection rate and offered several explanations for the tremendous differences between their impact on the Slovak population´s health. The success of the first wave is praised for the prompt reaction of the government and the implication of strict pandemic measures, but also for the population´s compliance with the rules (Nemec et al., 2020, as cited in Pažitný et al., 2022). Second´s wave epidemiological impact is described as "catastrophic" (Pažitný et al., 2022, p. 21). While in the first wave, approximately thirty people died (COVID-19 Deaths in Slovakia, Google News), in the second one, the number of casualties climbed to 11732 (Pažitný et al., 2022). The third wave added changed the final number of deaths to 19 732 (Pažitný et al., 2022, p. 23). Indeed, according to Our World in Data (Daily New Confirmed, n.d.), Slovakia has been the worst country in the world in COVID-19 deaths per one million people. On the 2nd of March, 2021, Slovakia had 18,15 COVID-19 deaths per million, while the average for Europe was 4,19 deaths per million, for Germany 3,68 deaths per million and for Denmark 0,58 deaths per million (Our World in Data, n.d.).

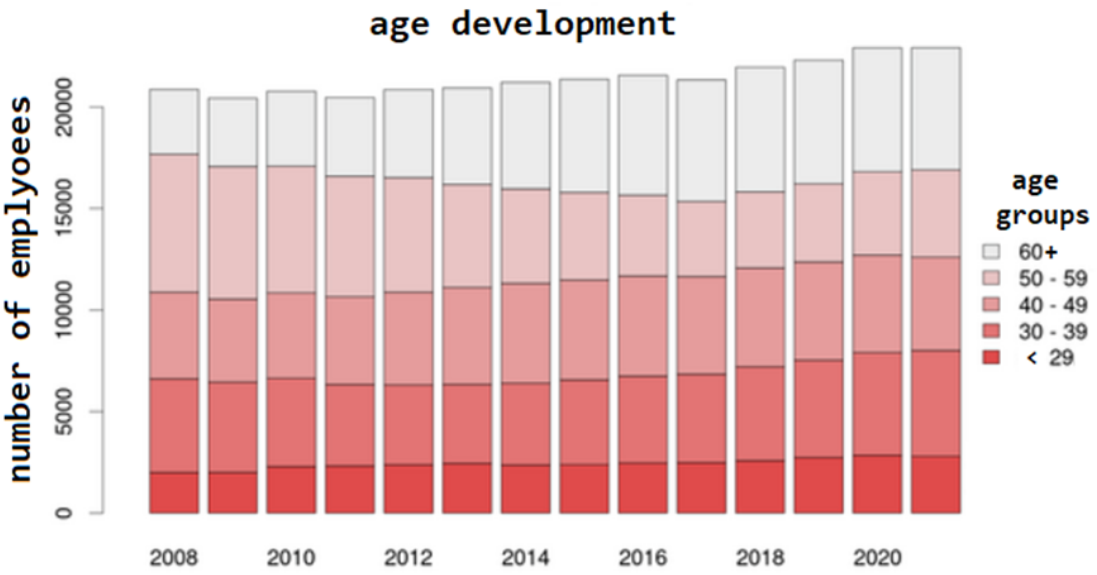
Moreover, Pažitný et al. (2022) believe that one of deciding negative factors which emerged in the third wave was the acute shortage of healthcare personnel, who had decided to leave Slovak healthcare after the previous year of the pandemic. Overall, the authors calculated that the excess mortality in Slovakia during the pandemic of COVID-19 reached 26 786 casualties. After comparing it Slovak situation to Germany´s, Pažitný et al. (2022) concluded that the poorly handled communication of government with the public and the suboptimal performance of the healthcare system resulted in the potentially unnecessary 18 476 deaths.

Waves of COVID-19 infections according to Pažitný et al. (2022):

- 1st wave March..... 2020----- June..... 2020
- 2nd wave October..... 2020----- May..... 2021
- 3rd wave October..... 2021----- March..... 2022

Slovakia in the year 2019 had a shortage of 12.2% among doctors and 9.0% among nurses, which is predicted to worsen by 2025 to 17.9% and 14.9% (Mathia, 2021). And as the author further notes, approximately one-quarter of Slovak doctors are over 60, and only a few young doctors are replacing them.

Figure 3. Age Distribution Development of Slovak Healthcare Professionals



Note. Proportional Age Development of Doctors in Slovakia. From *30 grafov o starnutí a zdravotníctve – Ako sa prejavil covid v zdravotníctve v roku 2020* by M. Páleník, 2022. Translated.

In order to fight such an unpleasant situation, Mathia (2021) suggests that financial rewards should be raised in order to motivate people to become healthcare workers. He argues that prestige is important and is correlated to wage height. Moreover, Mathia (2021) notes that a job in healthcare is extremely demanding; great communication skills, competence, and mental resilience are necessary. It might be claimed that fair and adequate financial rewards also dignify the working position. The quality of life should rise since Hidaka et al. (2021) proved that the level of health-related quality of life decreases when the effort/reward relationship is perceived negatively. Moreover, with higher wages, healthcare personnel gain the potential to attain more functionings, which determines their quality of life (Sen, 1993).

Thesis Statement:

Functionings and *capabilities* may serve as a solid concept to grasp the idea of the quality of life. Moreover, the gap between expected and actual capabilities stimulates unpleasant mental distress. In addition to that, the lack of governmental emphasis on providing basic capabilities for its citizens may threaten their dignity, which could be framed as an unwanted feature in a liberal democracy with a promise of social security. Health-related quality of life is a vital component of the general quality of life, which focuses more on the level of health, but directly influences the choice of capabilities that one can enjoy. Furthermore, COVID-19 infection significantly reduces the quality of life in the first-line population fighting the adversities of the pandemic. Several workplace-related stressors have been identified, providing a foundation for the exploration of loss among Slovak healthcare personnel. Measurement of possible worsening in health-related quality of life offers a general picture of the negative consequences and a tool to calculate loss in financial value. That may serve as a comparative tool for policy-making processes. The possible deterioration of health-related quality of life of Slovak healthcare personnel has not been explored or mapped yet, considering the scope of knowledge of the author of this thesis. According to the general consensus of the academic community, the situation of the Slovak healthcare system is, in metrics such as age development or the amount of necessary personnel, on a regressive trajectory. Therefore, the focus on the quality of life of professionals serving in this field could help identify or confirm yet identified drawbacks of the entire system.

Hypotheses:

H1: The quality of life of Slovak healthcare professionals has deteriorated due to a possible increase in the work-related stressors emerging with the pandemic of COVID-19.

H2: The monetised loss of quality-adjustedlife years (QALY) score among Slovak healthcare professionals exceeds the financial rewards provided by the Slovak government.

Hypothesis 1 will be proved or disproved by an analysis of health-related quality of life change in the sample of Slovak healthcare workers, which will be explored using a combination of survey and interview research and consequent data analysis.

The possibility of testing hypothesis 2 is conditioned by proving hypothesis 1. In the affirmative case, hypothesis 2 will be proven or disproven by transforming the score from EQ-5D-5L questionnaires into quality-adjusted life years (QALY) score. This score will be monetized accordingly to quality-adjusted life year (QALY) threshold value described in the Slovak legislature. Consequently, the one time of governmental reward in height of 350 € will be compared to the monetised quality-adjusted life years (QALY) score.

Chapter 2: Methodology

This section describes the methodology with which the hypotheses were proven or unproven. The first problem was the possible change in the health status of Slovak healthcare professionals before and after the pandemic of COVID-19. The concept of health-related quality of life (HRQoL) was adopted to observe the change in health status. A score of health-related quality of life (HRQoL) was measured through the EQ-5D-5L index. The data necessary for proving statistical significance were collected through a survey. Participants reported their assumed pre-pandemic health-related quality of life and their current health status. Secondly, the possible correlated factors of the change in the health status were investigated through qualitative methodology – semi-structured interviews with experts in the field.

2.1 Health-related Quality of Life

This section elaborates on one specific concept of quality of life; health related quality of life (HRQoL). In short, this concept focuses on the capabilities of a queried individual in regards to his health state. Further will be elaborated the method behind assessment of health-related quality of life score, its implications and also reliability of its retrospective measurement. This approach was utilized in the survey conducted for the purposes of this study.

2.1.1 EQ-5D-5L

EQ-5D is a standardized questionnaire that measures health-related quality of life (Szende et al., 2014). According to an official user manual created by Rabin et al. (2011), the EuroQol Research Foundation has developed similar instruments which have been utilized for more than 30 years (p. 4). Moreover, Rabin et al. also note that the EQ-5D-5L questionnaire directly measures the health status of the sample and is considered more precise than its predecessor developed in 1990, EQ-5D-3L (Rabin et al., 2011).

Regarding the initials in EQ-5D-5L, EQ stands for EuroQol Research Foundation, which is a not-for-profit organization that focuses on supporting initiating and performing scientific research (Rabin et al., 2011, para. 1). According to the authors, this questionnaire is internationally recognized and utilized for the assessments of health status, which is further often used in a cost-utility analysis. For instance, EQ-5D might serve as a variable for measuring QALY, quality-adjusted life-years. This questionnaire is used in a network of more than 90 members globally. Simply putting the phrase “EQ-5D” into google scholar search provides more than 110 000 scientific articles mentioning it.

5D refers to five dimensions of health, on which the health-related quality of life (HRQoL) is measured;

1. mobility
2. self-care
3. usual activities
4. pain/discomfort
5. anxiety/depression

5L refers to “five levels” indicating the intensity of respondent’s suffering;

1. no problems
2. slight problems
3. moderate problems
4. severe problems
5. unable to / extreme problems

It might be claimed that health-related quality of life assessed by the EQ-5D-5L questionnaire directly measures the ability of an individual to function standardly. Deterioration of any of the five dimensions, it might be claimed, the *capability* and consequent achievement of *functionality* from Sen´s (1993) and Nussbaum´s (1990) frameworks are limited. Such limitations might threaten people´s dignity (Claassen et al., 2014).

2.1.2 Reliability of HRQoL assessment

It is only fair to note that the assessment of HRQoL through the EQ-5D type questionnaire is a subjective evaluation of an individual’s quality of life and health status. The subjectivity may skew the results since some dimensions in the EuroQol (EQ) questionnaire, mainly pain and mental well-being might be introspectively experienced differently in, for instance, a few days period.

Purba et al. (2018) set the objective to test the reliability of HRQoL assessment, specifically through the EQ-5D questionnaire. They gathered a representative sample of 1056 participants in different age groups from the Indonesian population. The retest sub-sample consisted of 206 respondents who filled out the survey form twice.

The results of their inquiry presented “almost perfect agreement” (Purba et al., 2018, “Results” para.3) between the two waves of the survey with less than a month in between.

To focus on the problematics in HRQoL reliability, Andresen et al. (2003) conducted a study that used BRFSS HRQoL Core measurement (known as the Healthy Days module). Its structure and questions are less objective than the EQ-5D questionnaire used in this thesis’ survey methodology since their primary question is “Would you say that in general your health is…” with 5 level ordinal variables offered, ranging from “excellent” to “poor.” A similar question, measured on a VAS scale, is included in the last part of the EQ-5D questionnaire. However, this part of EQ-5D has been proven by Purba et al. (2018) to be less reliable than the results from the five dimensions (5D) part of the EQ questionnaire. Nevertheless, Andresen et al. (2003) found that in their original sample, with 1114 respondents in the first wave and 868 in the retest wave, the reliability was “moderate to excellent” (p. 342). The reliability was lower only in subgroups of older participants or people with a long time period between the two waves.

2.1.3 Reliability of Retrospective Health-related Quality of Life Assessment

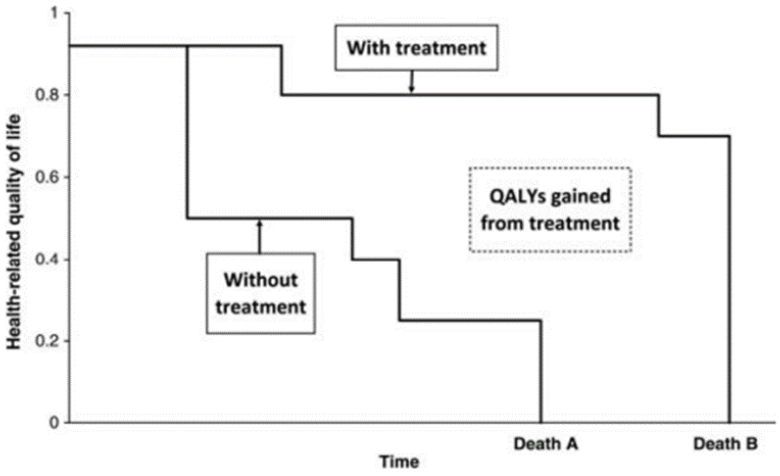
In the questionnaire used to collect data in this thesis, the participants were first assessing their pre-pandemic health-related quality of life. However, retrospection connected with introspection may threaten the objectivity of the results. Lawson et al. (2020) focused on testing the reliability and the level of confidence in the results of the retrospective health-related quality of life assessments. The first collection of data was done two weeks before their hip or knee joint replacement surgery. After the surgery, participants were asked to recall their health-related quality of life (HRQoL) assessed through the EQ-5D-5L questionnaire. This study found that on a group level, the differences between retrospective and past assessments were negligible (Lawson et al., 2020). However, the “correlation of paired scores was varied” (p. 1). The authors of the mentioned study concluded that the retrospective assessment results were valid in the context of their focus.

Another study conducted by Rajan et al. (2021) even concluded that retrospective EQ-5D-5L assessments might serve as “excellent statistical correspondence with “in the moment.” This study has worked with a larger sample of stroke patients. The period between measurements was different since there were four waves of the survey, with three months in between each wave. The results of this study help to confirm the validity of retrospective research since the sample was larger, there were more waves of conducting the research, and the results were claimed to be indisputable. A slight recall bias has been identified by the authors. However, the influence on the overall final score was framed as negligible (p. 1725).

2.2 Quality-adjusted Life Years (QALYs)

This thesis uses the EQ-5D-5L questionnaire type for different reasons. One is that quality-adjusted life-years (QALY) could be calculated with it. QALY is an index used in cost-utility analyses, mainly in healthcare. It consists of both quality and quantity of life measures (Whitehead & Ali, 2010). Since the financial resources in the healthcare system are limited, the prioritization of patients to treat is, unfortunately, of necessity. The QALY index serves as an indicator for decision-making since, based on data, it can predict the quality or quantity of life gained by a concrete treatment method. Figure 1 (Whitehead & Ali, 2010) illustrates the logic behind such decision-making processes.

Figure 4: QALYs Gained from a Medical Treatment



Note. Illustration of how treatment benefits are calculated using the QALY concept. From *Health outcomes in economic evaluation: the QALY and utilities*, by S. J. Whitehead & S. Ali, 2010, *British medical bulletin,* (p. 7)

The quality-adjusted life years (QALY) threshold is an upper limit value used in pharmaco-economics to evaluate a treatment's cost-effectiveness for a specific patient. This monetary value serves the purpose of evaluating how much one life-year in a perfect health state costs. The difference between the current quality-adjusted life years (QALY) level of a patient and his presumed elevation in the future health-related quality of life is a fraction of 1 quality-adjusted life years (QALY); therefore, the

upper limit for that specific treatment is a fraction of 1 quality-adjusted life years (QALY) threshold. The top value of this general upper limit has been debated among experts since different perspectives can be applied in assessing its height.

Act No. 363/2011 Coll. defines QALY as three to ten times the height of GDP per capita in Slovakia from before 2 respectively (Act No. 363/2011 Coll., Art. 2, par. 7.3). This approach of monetizing quality-adjusted life years (QALY) is probably the easiest way to grasp and defend its validity. The financial value of one quality-adjusted life years (QALY) could also be understood as a bundle of money that a public health insurance, VšZP, is willing to pay for an increase of one quality-adjusted life years (QALY) to a patient in need of a specific medication. This value is called the "QALY threshold," and it symbolizes the upper limit.

Precise data on how Slovakia redistributes the money and which coefficient in the interval from three to ten it uses are unreachable. However, according to an interview conducted for the purposes of this thesis with the former Director General of the analytical department of the Slovak Ministry of Health, Martin Smatana, MSc., the vast majority of cases were calculated with the GDP per capita multiplied by three. Consequently, multiplier three will be further used for the evaluation of potential QALY loss or gain. In 2020 the gross domestic product of Slovakia per capita reached the height of 17,110 €.

Therefore, the cost of 1 QALY in Slovakia in 2022 is 3 x 17,110 € = 51,330 €.

Moreover, QALYs are calculated

with two main variables; year of life & utility (HRQoL score). The basic

QALY formula is as follows:

1 QALY = 1 Year of Life x 1 Utility

The utility is calculated from the EQ-5D-5L questionnaire score, with value sets that prescribe each result in its adequate utility ranging from 0 (death) to 1 (full health) (Whitehead & Ali, 2010). All available value sets are to be found on the official EuroQoL webpage. Unfortunately, there hasn't been one assessed for Slovakia or any other

neighboring country, therefore German value set will be used to calculate HRQoL score.

Choosing to calculate quality adjusted life-years (QALYs) from possible change in Slovak healthcare professionals´ health-related quality of life (HRQoL) has several explorative reasons. One of them is inspecting whether the government with one-time rewards for this population indeed covered the monetized loss on quality of life. Another is to provide foundations for further research, which could for instance map the unfair redistribution of financial rewards among healthcare personnel, since some suffered potentially higher QALY loss.

2.3 Survey of Possible Change in Health-related Quality of Life among Slovak Healthcare Professionals

In order to create a dataset for proving or disproving the hypothesis, a quantitative survey approach has been chosen. The data collection took two forms; paper survey and online survey, with identical questions. The survey was launched on November 16, 2022, and ended on December 17, 2022. Only Slovak healthcare personnel were allowed to participate.

The questionnaire begins with a standardized introduction explaining the general content of questions, the research goal, and possible risks connected with filling it.

The questionnaire's content used two official standardized EuroQol EQ-5D-5L questionnaires translated into the Slovak language. The first one was of retrospective nature, it questioned the participants to describe their pre-pandemic health state. The second EQ-5D-5L set of questions enquired about the current self-perceived health state.

The order has been chosen to minimize possible question order bias and support research validity. The logic is based on the idea that healthcare workers in Slovakia are dissatisfied with the current system (Gurková et al., 2013). It was presumed that after understanding that the questionnaire asks about the current health state first, the participants would have a greater tendency to have misleading answers in the second; retrospective questionnaire since it is easier to skew the past than the present. Additionally, nostalgia is a cognitive bias that might also emerge.

After the EQ-5D-5L questionnaires, the participants faced a set of demographic questions followed by supplementary queries on their satisfaction with the governmental rewards or whether or not they worked on COVID-19 wards. Those variables were measured on Likert scale with five possible answers ranging from "yes" through "undecided" to "no." Such an approach has been chosen to ensure "internal consistency analysis" (Peytcheva, 2020, p. 4).

To increase the reliability of the survey, pre-testing should be conducted. It is indeed a crucial element in the data-collecting process (Backstrom, C. H. & Hursch, G. D., 1963). Therefore, after the content and form of the questionnaire have been approved by BISLA, pretesting was done accordingly to the recommendations of Caporaso (2020), expert review and focus group approaches were utilized. The focus group consisted of willing classmates. After this phase, several syntax changes were made.

2.3.1 Survey Sample

The goal of this study is to estimate the potential change in health-related quality of life amongst Slovak healthcare personnel who worked during also during the pandemic—which was the only limiting factor when choosing the participants. Therefore, the sample has not been further limited to specific characteristics such as region, job position, age, or gender. Here, a non-probability convenience sampling method has been used. The online survey was distributed through an invitation to participate on social media, which was spread across groups where healthcare professionals from all around Slovakia Online survey poses a potential bias introduced through the self-selection of the respondents. However, it reaches a different audience than the in-person distribution of the surveys. The combination of both methods was therefore used to increase the reliability of the survey.

2.4 Interviews

To support the findings and further explore possible correlated factors of the potential change in health-related quality of life among Slovak healthcare professionals, qualitative semi-structured interviews were conducted with experts in the field. The in-depth interview has been chosen as an appropriate tool to investigate connections between the dependent and independent variables of this thesis. Berry (1999) provides three different approaches for in-depth interviews; "the informal conversational interview," "the guided interview," and "the standardized open-ended interview." A method that serves the aim of this thesis best is the guided interview approach since it provides freedom to a certain extent and an emphasis on extracting essential data. The research is of qualitative nature; therefore, the data are an interpretation of the interviewees' testimony.

2.5 Analysis

Preliminary analysis consisted of a matrix correlation map so that strong correlations could be immediately identified and further focused on. In this approach, a linear regression method compared each variable with all other variables. Consequently, Statistical Package for the Social Sciences 29 (SPSS Inc., Chicago, IL, USA) was utilized for further statistical analysis. The value set necessary for calculating the final EuroQol score from the EQ-5D-5L questionnaire is not yet provided for Slovakia. Therefore, the German value set served those purposes. For the hypothesis test, a paired sample t-test was conducted. Secondly, correlations between demographic data and other secondary questions have been explored through statistical t-tests.

Interviews were analyzed using guidelines from the Qualitative Analysis Guide of Leuven (QUAGOL) (de Casterlé et al., 2012). Common, re-emerging topics in all three interviews were properly coded and focused on. On the other hand, this guide recommends and strongly advocates for teamwork in narrative identification, which was not feasible in the case of this thesis.

2.6 Limitations

This thesis has several limitations that may be avoided in further research. One of the main limitations is connected with the sample since the sampling method was conducted with a non-probability approach. What is more, the participants were not randomly selected but were approached by the author or decided to participate online. Therefore, participation bias might be present. Consequently, the sample might not reflect the healthcare population of Slovakia in several demographic or profession-related characteristics. For instance, the age, sex, or work position redistribution among the sample may not reflect the Slovak situation.

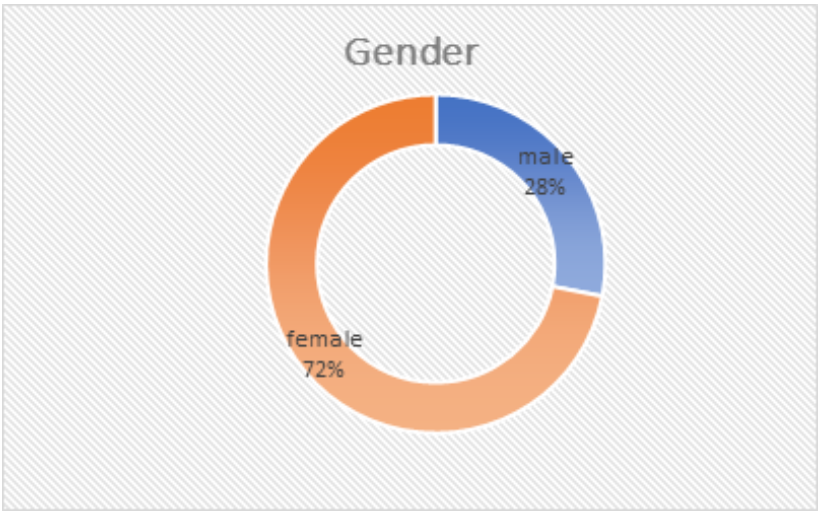
Moreover, not negligible might prove the fact that the first EQ-5D-5L questionnaire asks about the health state from two and a half years ago. Even though the retrospective approach in health-related quality of life evaluations proved reliable (Rajan et al., 2021), further research is needed to ensure higher validity. Moreover, not negligible is also the fact that self-reported data are always less reliable than other types of measurements.

Chapter 3: Findings

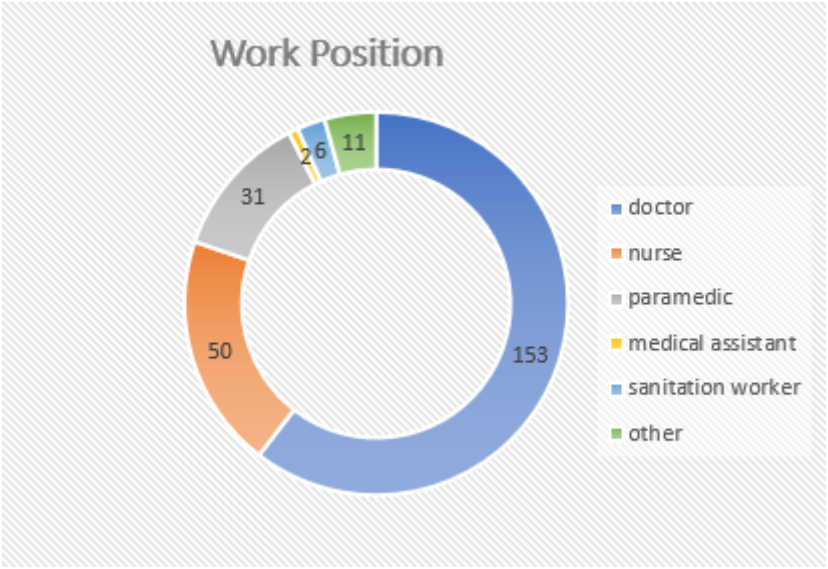
3.1 Sample Description

In total, 254 healthcare professionals participated in the survey. The majority of them, 182 (71,6%), declared to be of the female gender, 71 (27,9%) of the male gender, and one participant chose neither of the options (approximately equivalent to the distribution based on gender among Slovak healthcare personnel, Páleník, 2021). Regarding their job position, one hundred 53 (61%) reported to be physicians, 50 (20%) nurses, 31 (12%) rescuers, two (0,01%) healthcare assistants, six (0,02%) sanitation workers, and eleven (0,04%) of other healthcare professionals. The distribution of respondents based on their age can be seen in Graph 3.1.3. Most of the respondents were in the category of 35 to 43 years old (n = 43). Moreover, due to the sampling method and data collection, most respondents are from Western Slovakia (197, i.e. 77,87%). Nearly one half of the participants worked at the intensive care unit (ICU) (117, i.e. 46%).

Graph 1 Gender of Respondents



Graph 2 Work Position of Respondents



Graph 3 Participants by Age

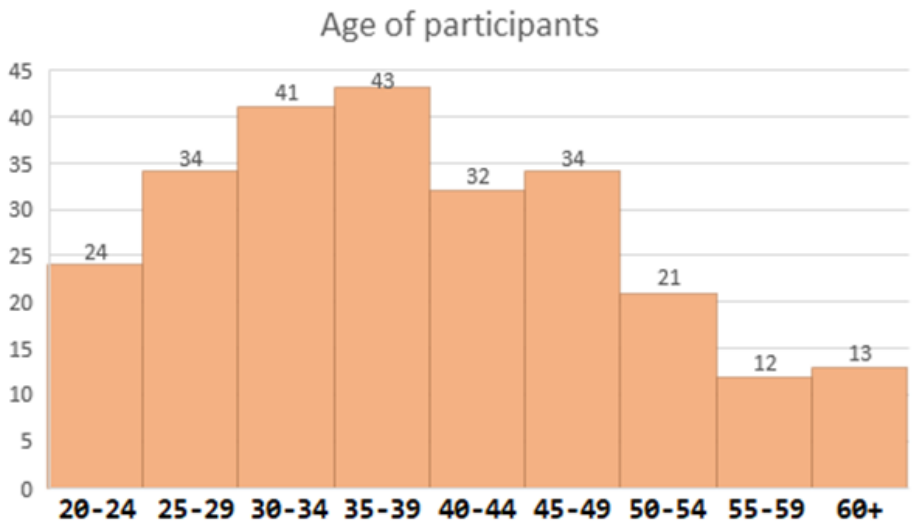


Table 1 Regional Distribution of Participants

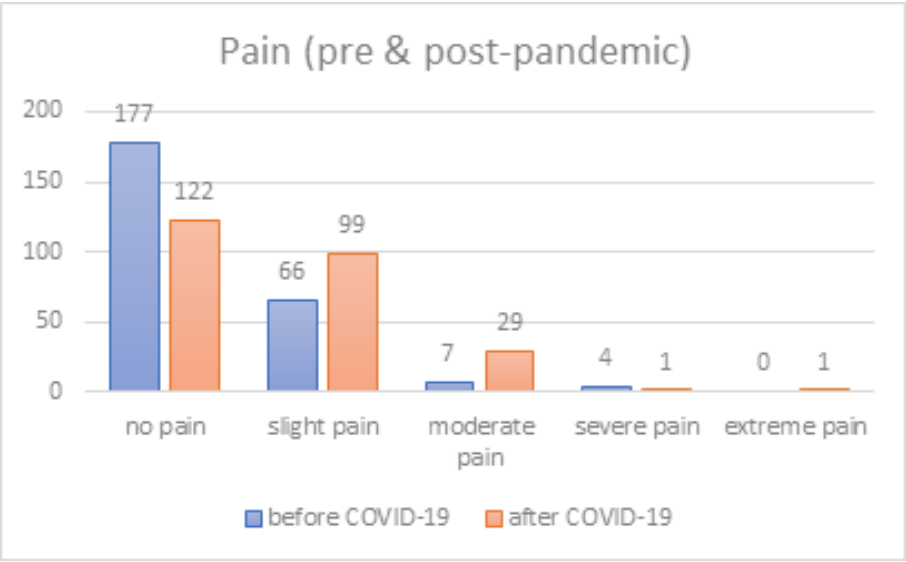
Region	n
Bratislava Region	101
Trnava Region	70
Trenčín Region	10
Banská Bystrica Region	6
Košice Region	16
Prešov Region	17
Žilina Region	17
Nitra Region	16

3.2 Health Status Change – Data Analysis

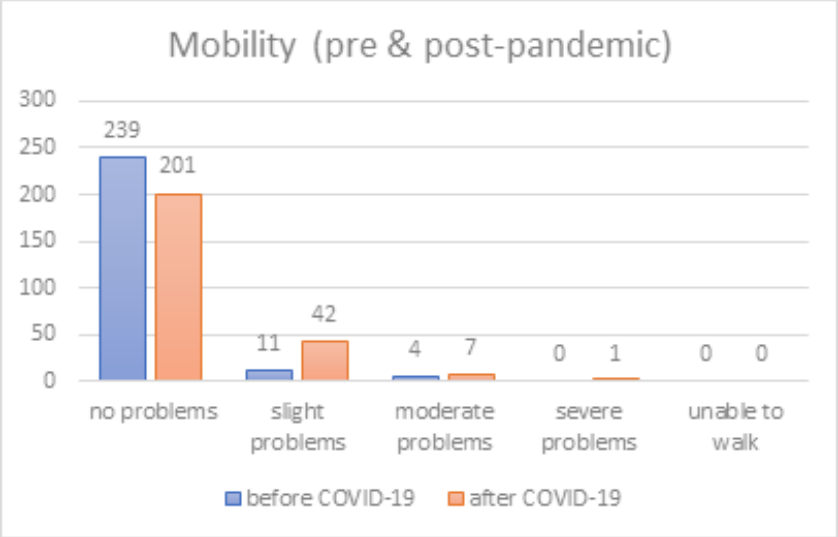
The final number of participants reached 254. However, only 249 filled the pre-pandemic and current health status questionnaire. Health-related quality of life of Slovak healthcare professionals from before the pandemic of COVID-19 was compared to their current health status approximately two and a half years after the outbreak of COVID-19 in Slovakia. A paired-sample t-test was conducted to compare the two value sets. There was a significant difference in the scores for pre-pandemic health status (M=0.96, SD=0.08) and current health status (M=0.90, SD=0.12) conditions; t (7.96) =248, p =0.000.

The most significant negative changes in the five dimensions of health status were observed in following order; *pain or discomfort, mobility, anxiety or depression*. On the other hand, there was found a slight increase in the selfcare dimension.

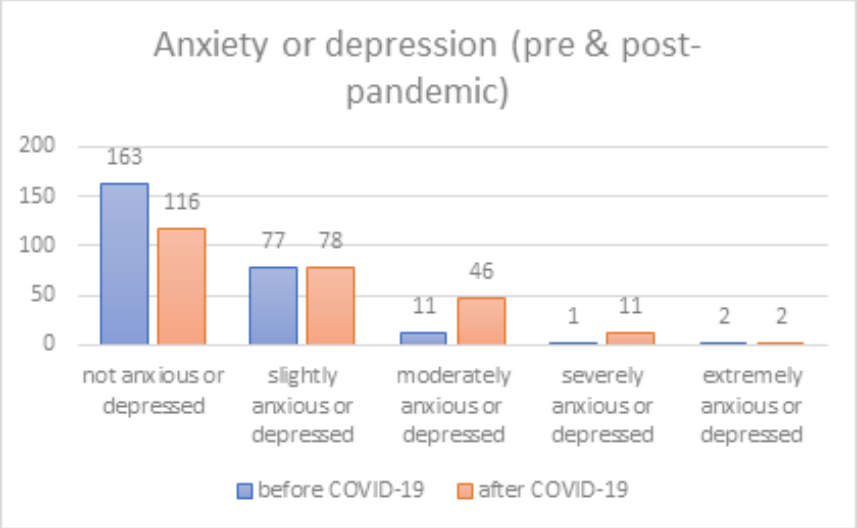
Graph 4 Health Status Change on Pain or Discomfort Dimension



Graph 5 Health Status Change on Mobility Dimension



Graph 6 Health Status Change on Anxiety or Depression Dimension



Note. All three graphs illustrate the deterioration of health status on different health dimensions among Slovak healthcare personnel during the COVID-19 pandemic. Connecting blue columns (before pandemic) creates a steeper curve than connecting the orange columns (after pandemic). The redistribution signifies deterioration of health status, since more participants reported a score closer to extreme problems than to no problems.

3.3 Possible Related Factors to Health Status Change – Interviews

Three experts in the field were interviewed.

The first interviewee was PhDr. Zuzana Varjašová, the Head Nurse of the pulmonary department of the University Hospital located in Ružinov, Bratislava district. She had the opportunity to manage an intensive care unit focused on treating COVID-19 patients who suffered severe consequences of COVID-19 infection.

Secondly, MUDr. Tomáš Szalay, PhD. agreed to participate. He is a director of the health department and doctor of the Bratislava region, who previously also worked as a senior analyst at the Health Policy Institute. He has experience with managing the pandemic from the top-down and potentially witnessed some managing mistakes which led to decreased quality of life among Slovak healthcare professionals.

The third interviewee was Msc. Martin Smatana, the former Director General of the analytical department of the Slovak Ministry of Health. He has rich experiences with the QALY index and cost-utility analysis in healthcare.

When the interviewees were asked about possible changes in the health status of healthcare professionals, all answered in like manner. All three declared that the pandemic probably negatively influenced the health of healthcare personnel. Consequently, they were asked about possible related factors of the change. They all mentioned the uncertainty associated with governmental pandemic measures, general administrative chaos, and the government's incapability to communicate its next steps in preventing and fighting the negative consequences of the pandemic of COVID-19.

Martin Smatana, noted that from his observations, currently, after the pandemic work strain, "many healthcare workers remained lethargic." He elaborated on this issue and argued that despite an insufficient amount of new data to support his thesis, "it is currently provable that productivity in Slovak hospitals decreased." Connected with bleak future prospects for the number of healthcare personnel, he

believes that increasing financial rewards is the only short-term solution the government should do.

Moreover, Zuzana Varjasiová, concluded that before the pandemic of COVID-19 started, she vouched for the quality that her hospital department had. However, currently, she cannot do so. Consequently, she mentioned concerns about the shortage of healthcare professionals since some of her older colleagues decided to go to pension after experiencing the work strain during the COVID-19 pandemic. Additionally, Zuzana Varjasiová, during the interview, several times emphasized the lack of free time and space for mental hygiene, which, according to her, caused a noticeable decrease in the mental health of her subordinates.

Interestingly, Zuzana Varjasiová mentioned the dignity of healthcare professionals as an essential issue. She believes that the deterioration of hers and her colleagues´ health status did not get enough public attention. Moreover, she believes it is a long-term issue that healthcare professionals do not get the public status they deserve.

Table 2 Findings from Interviews

Common explanations	
uncertainty assosciated with governmental pandemic measures	
general administrative chaos	
lack of clear communication from political authorities	
Case specific explanations	
PhDr. Zuzana Varjasiová	lack of free time necessary for mental hygiene
Martin Smatana, MsC.	insufficient financial rewards
MUDr. Tomáš Szalay, PhD.	lack of shared vision about the future of healthcare system

3.4 Comparison of Quality-adjusted Life Years Loss and Governmental Reward

The median of pre-pandemic EuroQol EQ scores of Slovak healthcare personnel reached the value of 0.96. A lower change value in the median is 0.04, while the higher is 0.07 (CI = 95%). One quality-adjusted life year (QALY) is valued in the Slovak republic at 51,330 € (Act No. 363/2011 Coll., Art. 2, par. 7.3). The significantly worsened work strain of Slovak healthcare personnel started in the second half of 2020 (Pažitný & Zajac, 2021). Therefore, the crucial period to be observed lasted approximately 28 months, from 1.9. 2020 to 31.12.2022. That stands for two and a third years. After multiplying this variable with the final health-related qualify of life lost, the quality-adjusted life years loss ranges from 0.09 to 0.16. After monetizing this value, Slovak healthcare professionals lost between 4791 € and 8384 € in regards to their health-related qualify of life loss during the pandemic of COVID-19. That is between 171 € and 299 € monthly.

The governmental reward provided to healthcare personnel in Slovakia after two years of pandemic reached the value of 350 €. Therefore, if quality-adjusted life years losses were used for calculating the governmental rewards, Slovak healthcare personnel would earn the value of 350 € in two months, if not sooner.

Conclusion

A government that values the dignity of its citizens should consider whether their quality of life is not threatened (Nussbaum, 2000). To secure dignity and well-being, the government should create an environment where citizens can fulfill their desired functionings (Nussbaum, 2000). This thesis explored whether the quality of life of Slovak healthcare workers has remained the same due to work conditions during the COVID-19 pandemic. This thesis also analyzed whether the governmental rewards reached the value of monetized health-related quality of life loss among Slovak healthcare professionals.

The data analysis of the survey confirmed the assumption about possible health-related quality of life with a statistical significance. This means that the health-related quality of life among Slovak healthcare personnel deteriorated during the pandemic of COVID-19. The most notable negative change was observed in *the dimension of pain or discomfort.*

After monetizing the value of the health-related quality of life loss, the results showed that the governmental reward height of 350 € equalled roughly two months of health-related quality of life lost among healthcare professionals. If the reward value were calculated this way, each participant would receive compensation of between 4791 € and 8384 €. However, it is critical to note that healthcare personnel received several other government financial compensations during the pandemic.

The interviews shed light on possible factors correlated with a change in health-related quality of life. All interviewees identified the *uncertainty associated with governmental pandemic measures, general administrative chaos, and the inability of governmental authorities to communicate their next steps* as the main explanations for health-related quality of life related to health. Other possible explanations of the change were specific to each expert interviewed. They named *the lack of free time necessary for mental hygiene, insufficient financial rewards, and the lack of shared vision about the future of the healthcare system* as the main contributors to adverse health status change.

The findings and results could serve different domains. Political authorities could consider the stressed importance of clear communication and predictability. The general public might, after confronting the results, reconsider its opinion and behaviour towards professionals who suffered still lasting and not negligible health status damage. Last but not least, the academic community might feel encouraged to undertake further research into these problems.

Resumé

Táto práca skúma zmeny v kvalite života súvisiacej so zdravím medzi slovenskými zdravotníkmi počas pandémie COVID-19. Dôležitosť tejto problematiky je podložená spojením dôstojnosti, kvality života a úlohy vlády v ich zabezpečovaní (Nussbaum, 2000). V liberálnej demokracii so sociálnou politikou sa z definície vyžaduje, aby vedenie krajiny zabezpečilo občanom príležitosti a možnosti na naplnenie svojich potrieb. Ako pozorovaná populácia boli zvolení slovenskí zdravotníci, pretože práve ich pracovné vyťaženie a povinnosť pracovať počas krízového stavu obmedzili ich príležitosť na dôstojný život a teda aj kvalitu života.

Z daných faktov vyplynula hypotéza, ktorá tvrdí že sa slovenským zdravotníkom počas pandémie zhoršila kvalita života v zdraví. Následne sekundárna hypotéza tvrdí, že štátna odmena vo výške 350 € nedosahuje speňaženú stratu na kvalite života v zdraví v uvedenej populácii. Dokazovanie sekundárnej hypotézy má za úlohu poukázať na reálnu, istým spôsobom zhmotnenú, stratu na kvalite života.

Overovanie prvej hypotézy bolo prevedené kvantitatívnym výskumom s následnou dátovou analýzou. Bol vytvorený zoznam otázok, ktorý obsahoval dve verzie štandardizovaného EQ-5D-5L dotazníka; retrospektívnu a tradičnú formu. Výsledky dátovej analýzy potvrdili hypotézu. So štatistickou významnosťou (CI = 99%) sa dá na základe zistení z tejto štúdie tvrdiť, že sa slovenským zdravotníkom počas pandémie zhoršil zdravotný stav. Speňažená hodnota straty na zdraví sa za 28 mesiacov v pracovnom vyťažení nachádza s presnosťou 95 % medzi 4791 € a 8384 €.

Za účelom zadefinovania možných korelačných faktorov so danou negatívnou zmenou v kvalite života v zdraví u slovenských zdravotníkov boli vykonané tri polo-štruktúrované výskumné rozhovory z odborníkmi na danú tematiku. Všetci traja sa zhodli na tom že neistota spojená s vládnymi proti-pandemickými opatreniami, všeobecný administratívny chaos a nezvládnutá komunikácia zo strany autorít mohli korelovať so stratou kvality života v zdraví slovenských zdravotníkov. Zuzana Varjasiová navyše uviedla ako ďalší faktor nedostatok voľného času na mentálnu hygienu, Martin Smatana nedostačujúce finančné odmeňovanie zdravotníkov. Tomáš

Szalay zase kritizoval chýbajúcu všeobecnú víziu pre budúcnosť slovenského zdravotníctva.

Zistenia a výsledky tejto práce môžu ďalej slúžiť rôznym oblastiam. Napríklad, politické orgány by mohli zvážiť zlepšenie v zrozumiteľnosti komunikácie a predvídateľnosti v riadení kríz. Široká verejnosť by po konfrontácii s výsledkami mohla prehodnotiť svoj názor a správanie sa k zdravotníkom, ktorí utrpeli nezanedbateľné zhoršenie ich zdravotného stavu. V neposlednom rade by sa akademická obec mohla cítiť povzbudená k ďalšiemu výskumu v oblasti danej problematiky.

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