Working Life Expectancy of Physicians and Nurses in Czechia: Disparities, Trends and Implications for Healthcare Workforce Planning

Abstract

Background

In the context of demographic ageing, ensuring sufficient human resources in the healthcare system is becoming an increasingly urgent issue in all developed countries, including Czechia (OECD, 2023). Among healthcare professions, primary care physicians and nurses are most burdened by demographic ageing, as their roles combine high workload demands with lower professional prestige than other physicians' specializations and for nurses it is lower financial reward (Russo et al., 2023; Drennan et al., 2019).

The ageing workforce and the patterns of health professionals exiting the system – shaped by institutional factors as well as evolving lifestyles and the promotion of active ageing – raise questions about the sustainability of health systems and the duration of active professional life. Understanding how long health professionals remain in practice, and how exit patterns differ by profession, specialization, and type of care provider, is essential for realistic workforce projections and strategic capacity planning.

The main objective of this study is to identify age- and provider-specific trends in the intensity and timing of exits from the Czech healthcare system and to estimate working life expectancy (WLE) among physicians and nurses. These findings provide the evidence base necessary for developing targeted workforce retention strategies.

Methods

The analysis was based on individual anonymized data for physicians and nurses obtained from the General Health Insurance Company of the Czech Republic (GHIC), which has contractual agreements with almost all healthcare providers in the country. The dataset covered the period 2014–2022 and included detailed information on age, gender, type of care provider (outpatient/inpatient), and specialization.

To accomplish the objectives of the study, methods based on the construction of life tables were used. This method was used in our previous study (Havelková, Šídlo, 2025), but instead of using single decrement life tables, in this study we applied the multistate life table method (Schoen, 1975). This approach allows for the consideration of transitions between care providers (inpatient (IC), outpatient (OC)) and the explicit modelling of definitive exits from the workforce. The main input for the HWF working life tables consisted of the calculation of the transition probabilities by age

between states. These probabilities were calculated using the direct method and smoothed by weighted moving average and Gompertz-Makeham function.

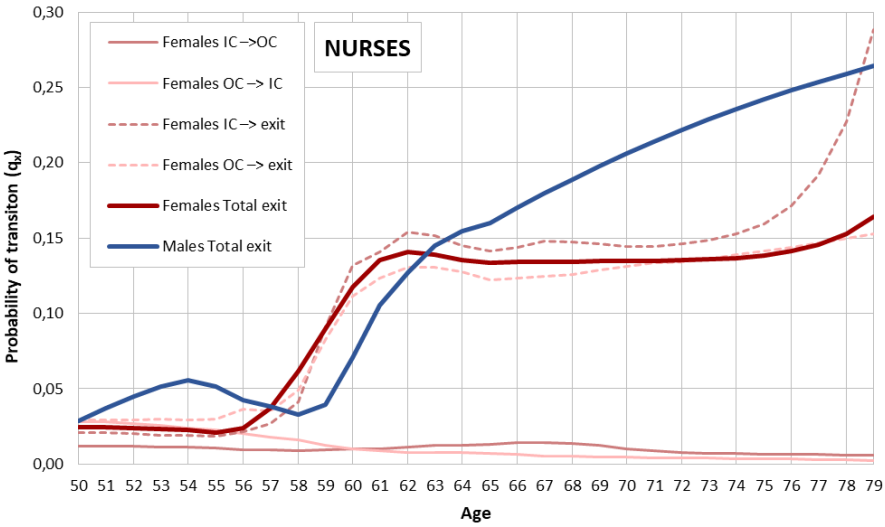
The working life expectancy represents the expected average number of remaining years of work at exact ages. Because many healthcare workers continue part-time employment beyond statutory retirement, WLE was considered a more suitable indicator than the average retirement age. To focus on late-career dynamics, the analysis was initiated at age 50, assuming that all members of the hypothetical cohort (l_{50} = 100 000) were initially employed within a specific type of care provider. Confidence intervals were calculated to represent the degree of uncertainty in the result.

Results

The exit probability varies between genders, professions and the types of care providers. Among nurses, the exit probability begins to increase significantly around the age of 56 for women and 59 for men (Fig. 1), corresponding to the statutory retirement age. Physicians, in contrast, tend to exit the healthcare system more gradually, frequently remaining in practice well beyond retirement age (Fig. 2).

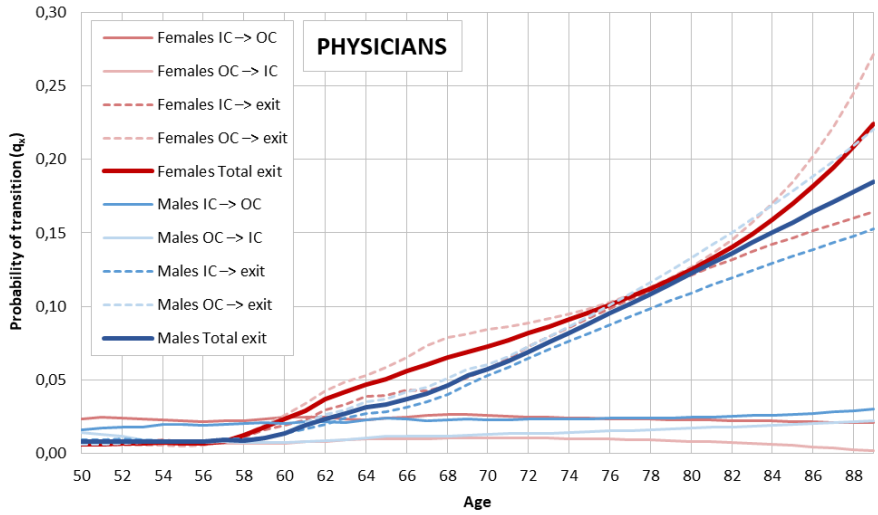
Provider type also played an important role. Up to the age of 58, the exit probability is higher for nurses in outpatient care (OC) than for nurses in inpatient care (IC), with the pattern reversing thereafter. Up to the age of 60, the probability of transition from OC to IC is higher, and the opposite is true for subsequent ages. For physicians, the trend was opposite: slightly higher exit probabilities in IC before age 58 and in OC at later ages. For both genders, the probability of transition from IC to OC is higher than vice versa.

Fig. 1: Probability of the transition of nurses between states by age and gender, Czechia, 2014–2022



Source: GHIC; author's own calculations

Fig. 2: Probability of the transition of physicians between states by age and gender, Czechia, 2014–2022



Source: GHIC; author's own calculations

Differences in working life expectancy (WLE) reflected variations in the transition curves. WLE at the age 50 was found to be significantly longer for physicians than for nurses (Table 1).

For IC nurses, WLE was on average one year higher than for OC. WLE for OC nurses was almost unchanged, while it increased for IC nurses. For men, WLE increased over the years, so the difference in WLE between men and women almost evened out.

Among physicians, WLE at age 50 was around two years higher in OC than in IC by approximately two years for both sexes. The trend for WLE at age 50 is a decrease in OC and an increase in IC, though the gap has been narrowing – likely due to the COVID-19 pandemic, which temporarily reduced exits in inpatient care.

Table 1: Working life expectancy of nurses and physicians at age 50 by gender and type of care provider, Czechia, 2014–2022

Gender	Type of care provider	Type of healthcare profession	
		Nurses	Physicians
Females	Outpatient care (OC)	11.3 (11.1–11.5)	19.6 (19.3–19.9)
	Inpatient care (IC)	12.4 (12.2–12.5)	17.4 (16.9–17.9)
	Total	13.4 (13.3–13.5)	22.0 (21.6–22.3)
Males	Outpatient care (OC)	-	20.8 (20.4–21.3)
	Inpatient care (IC)	-	18.9 (18.3–19.4)
	Total	12.2 (11.6–13.0)	23.7 (23.3–24.1)

Source: GHIC; author's own calculations

The higher WLE of OC physicians than that of those working in IC can be explained by the differences between these sectors. Inpatient care is often shift work-based, including working nights, weekends and holidays, which results in enhanced levels of physical and psychological stress. In contrast,

outpatient care is provided on a fixed hours basis and allows for a better work-life balance, with increased flexibility – an important factor in retirement decisions (Stattin, Bengs, 2022).

The difference in intensity and timing of exits was also observed between specializations of primary care physicians. The expected average number of remaining years of work at age 50 decreased over this period by more than 1 year for both genders, which may have been related to the Covid-19 pandemic and the introduction of compulsory electronic prescriptions. General gynaecologists were observed to have the longest WLE (23.5 years) and dentists the shortest WLE (18.5 years).

The results suggest that factors such as the organisation of work, flexibility and workload intensity play key roles in shaping the decisions of healthcare workers to remain in or exit the system.

Conclusions

The study demonstrates substantial differences in working life expectancy and exit patterns between physicians and nurses, and across healthcare sectors. These disparities underscore the complexity of maintaining an adequate and sustainable healthcare workforce.

From a policy perspective, the findings provide a basis for evidence-based workforce planning and the formulation of retention strategies. Our findings suggest that retention strategies must be profession-specific since exit drivers vary according to the healthcare occupation. Measures such as improved working conditions, flexible scheduling, and opportunities for professional development could mitigate premature exits.

For physicians, particularly in primary care, group practice models that reduce administrative burdens and promote knowledge sharing may enhance retention. For nurses, expanding clinical competencies, reducing administrative workloads, and ensuring competitive remuneration – as seen in Nordic countries – represent effective approaches (OECD, 2021).

Finally, differences in WLE across healthcare professions should be explicitly integrated into future workforce projection models, ensuring more realistic planning for healthcare system sustainability in ageing societies.

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