

Healthcare Worker Capacities in Social Services for Elderly Care: Qualification and Demographic Structure

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Abstract: An essential challenge concerning the aging of the population is long-term care for the elderly. It raises personnel and financial needs to provide this care. The paper aims to describe the state of the personnel capacities in healthcare provision within social care services for the elderly in the Czech Republic. The data source was the social services statements for 2017 filed at the Ministry of Labor and Social Affairs. The results show that the average age of healthcare workers in social care services for the elderly in the Czech Republic in 2017 was 46.7 years old, with a significant dominance of women (96.6%). The average monthly gross salary for these workers was CZK 30,404. In light of these figures and the context of international comparison, it is evident that in the field of social care it is necessary to consider not only the financial needs but also the effort to support workforce development.

Keywords: social care; healthcare worker; personnel capacity; age structure; regional analysis

JEL Classification: H75; J14; J24

1. Introduction

The Czech population is aging. According to the Czech Statistical Office (2020), the proportion of seniors aged 65 and over in the population in the Czech Republic was 18.8% in 2017, 20.0% in 2020, and the estimate for 2050 is 28.6%. An essential challenge related to demographic aging is elderly care, both in residential facilities and in-home (field) services (Duvall & Andrews, 2010; Průša, 2015).

Direct relatives as informal caregivers at a time when the elderly need care are often employed full time. Family caregivers face not only a high workload but also a financial and psychological burden (Marešová et al., 2020b). This again contributes to the increased need for professional care provided by formal caregivers, as evidenced by a number of studies (e.g., Průša, 2015; Kubalčíková & Havlíková, 2016; Langhamrová et al., 2018; Marková et al., 2020).

The need for appropriate professional staff to ensure adequate long-term care for the elderly includes not only social care but also health care provided in social care services.

According to the Czech Social Services Act (Act No. 108/2006 Coll.), professional staff in social services are divided into social workers, social service workers, healthcare workers, pedagogical workers, and counselors. This paper focuses on the healthcare workers in social care services, including residential, ambulatory, and field services.

Many seniors come to residential social service facilities directly from hospitals. Especially in this case, healthcare professionals play a key role, but there is a shortage in the Czech Republic, namely in general nurses (Institute of Health Information and Statistics of the Czech Republic & Institute of Biostatistics and Analyses, 2018; Maresova et al., 2020c). General nurses are required to exercise a professional approach, expertise, and empathy, and to preserve human dignity, autonomy, and the highest possible degree of self-sufficiency of the elderly (Malíková, 2020). The responsibility of nurses in residential social services is significantly increased because a physician is not present in the facility throughout the day.

Neighboring Germany also suffers from a nursing shortage. According to Hackmann (2010), there will be about 4.4 million nursing cases by 2050, meaning an increase of 270%. In the future, care will be provided less frequently by family caregivers and increasingly by professional institutions such as home care services and nursing homes (Schönrock et al., 2015). Therefore, an additional half a million healthcare workers will be needed in the care sector (Harling et al., 2014).

High-quality nursing care contributes to improving the quality of life of seniors in residential facilities, with respect to their health and degree of self-sufficiency (Duvall & Andrews, 2010). In addition, the share of clients with higher degrees of dependence in residential social service facilities is growing in the Czech Republic (Komárková et al., 2020). Therefore, there is growing importance of the role of social service providers and the associated higher demands on public expenditures (Langhamrová et al., 2018; Maresova et al., 2020a) and vocational education in the related fields (Schönrock et al., 2015; Skela-Savič et al., 2020).

Průša (2015) points out that the provision of social services by the Czech regions varies considerably and that the structure of services is not optimal. Based on the spatial accessibility analysis, Vrabková et al. (2021) demonstrate that new social care services for the elderly are not set up in new places than existing ones, so implementing the National Action Plan Supporting Positive Aging for 2013–2017 (Ministry of Labor and Social Affairs, 2014) is not effective. Within the framework of the National Strategy of Social Services Development for 2016–2025 (Ministry of Labor and Social Affairs, 2016), there is an appeal to the need to interconnect the social and health systems for long-term care, the so-called socio-health borderline. This requires cooperation between the Ministry of Labor and Social Affairs and the Ministry of Health of the Czech Republic.

For a deeper understanding of the possibilities of connecting health and social care, this paper aims to describe the state of the personnel and financial needs to provide healthcare in the area of social care services for the elderly in the individual regions of the Czech Republic. In particular, the paper answers the following research questions:

RQ1: What is the qualification structure of healthcare workers in social care services for the elderly in the Czech Republic?

RQ2: What is the proportion of healthcare workers among formal caregivers in social care services?

RQ3: What is the gender structure of healthcare workers in social care services across the regions?

RQ4: What is the age structure of healthcare workers in social care services across the regions?

RQ5: What is the average salary of healthcare workers in social care services in the individual regions?

2. Methodology

The data source was the social services statements filed at the Ministry of Labor and Social Affairs of the Czech Republic. This provided us with selected data from 2017 for scientific and research purposes. Specifically, three data sets were included:

1. a list of registered social service providers, including their target groups,
2. anonymized data on all employees in social services,
3. total personnel costs per social service provider.

The Czech Social Services Act defines fourteen types of social care services. For this paper, the first data set was used to select social care services targeted at the elderly. In total, we identified 2,113 social care providers. Table 1 then shows both the numbers and percentages of these services in their total number. The services are listed according to their order of occurrence in the Czech Social Services Act. It is apparent that two-thirds of social care service providers list the elderly as the target group.

Table 1. The number and percentage share of social care services targeted at the elderly with respect to the total number of social care services (regardless of their target group).

Social Care Services	Type	Total Number	For the Elderly	
			Number	Proportion (%)
Personal Assistance	F	230	174	75.7
Caregiving Service	A, F	710	707	99.6
Emergency Service	F	17	17	100.0
Guiding and Reading Services	A, F	16	6	37.5
Independent Living Support	F	60	1	1.7
Respite Care	A, F, R	300	227	75.7
Daily Service Centers	A	81	37	45.7
Day Care Centers	A	276	99	35.9
Weekly Care Centers	R	58	9	15.5
Homes for the Disabled	R	204	10	4.9
Retirement Homes	R	529	529	100.0
Extra Care Housing	R	326	200	61.3
Sheltered Housing	R	211	11	5.2
Social Services in Healthcare Institutions	R	107	86	80.4
Total		3,125	2,113	67.6

Note: A – ambulatory services, F – field services, R – residential services

For the selected elderly care services, the recalculated numbers of healthcare workers were analyzed based on their workload as set out in their employment contracts or contract agreements, which vary according to the type of social care service, as included in the second

data set. The analysis of the age and gender structure of healthcare workers also took their workload into account (1.0 for full-time employees; 0.5 for half-time employees etc.).

Based on the third data set, their average salaries were calculated according to the type of social service and the region. The average salary was calculated as a twelfth of the total annual cost of the employees with respect to their total workload by service and region. This result was then divided by 1.34 due to the adjustment of the amount from the statutory social and health insurance contributions by the employer.

3. Results

As the data should cover the whole population of employees in social care services in the given year, the analysis was based only on descriptive statistics. For clarity, the results are divided into five subsections according to the individual research questions.

3.1. Qualification Structure (RQ1)

Twelve different job categories (work roles) were identified for healthcare workers in social care services. Specifically, these were physicians, general nurses, assistive personnel, healthcare social workers, physical therapists, occupational therapists, nutritional therapists, addiction therapists, caregivers, emergency medical technicians, other professionals, and other unspecified personnel. Table 2 gives a basic overview of the full-time equivalents (FTEs) of healthcare workers, distinguishing the five most common work roles in social care services for the elderly.

Table 2. FTEs of healthcare workers in social care services for the elderly, separately for the most common work roles.

Social Care Services	Total	GN	AP	PT	EMT	OT
Personal Assistance	7.7	3.1	0.2	0.2	0.0	3.2
Caregiving Service	40.3	25.8	3.8	0.5	0.1	0.0
Respite Care	184.7	139.9	5.4	6.7	1.4	4.0
Daily Service Centers	0.4	0.0	0.0	0.1	0.0	0.0
Day Care Centers	4.8	2.4	0.1	0.7	0.0	1.0
Retirement Homes	3,382.7	2,895.8	117.3	161.2	20.7	52.4
Extra Care Housing	1,158.7	938.7	57.4	52.6	15.1	41.4
Social Services in Healthcare Institutions	294.9	159.6	14.6	7.0	67.5	1.5
Other	52.0	36.0	0.9	5.1	0.0	1.2
Total	5,126.1	4,201.3	199.7	134.2	104.8	104.7

Note: GN – general nurses, AP – assistive personnel, PT – physical therapists, EMT – emergency medical technicians, OT – occupational therapists

In 2017, a total of 5,126 healthcare workers were employed in social care services (Table 2). As expected, general nurses are the largest group, with a total of 4,201 FTEs, which represents 82% of all healthcare workers in social care services for the elderly. Furthermore, assistive personnel, physical therapists, emergency medical technicians, and occupational therapists were the most represented work roles among the twelve work roles considered, with more than 100 FTEs. To supplement, the workload of physicians in social care services reached 37.6 FTEs.

3.2. Proportional Representation (RQ2)

Social workers, social service workers, and healthcare workers are considered as formal caregivers in social services in the analysis. A comparison of the workload of these three groups of formal caregivers is shown in Table 3, including their percentage shares of the total number of FTEs for formal caregivers.

Table 3. FTEs of social workers, social service workers, and healthcare workers and their percentage share with respect to the total number of formal caregivers.

Social Care Services	SW		SSW		HW		Total FTE
	FTE	%	FTE	%	FTE	%	
Personal Assistance	123.3	8.9	1,250.2	90.5	7.7	0.6	1,381.1
Caregiving Service	501.5	9.1	4,975.1	90.2	40.3	0.7	5,516.9
Respite Care	97.2	9.3	768.2	73.2	184.7	17.6	1,050.2
Daily Service Centers	23.8	22.3	82.6	77.3	0.4	0.4	106.8
Day Care Centers	40.5	13.6	252.1	84.8	4.8	1.6	297.4
Retirement Homes	914.4	6.2	10,494.0	70.9	3,382.7	22.9	14,791.1
Extra Care Housing	276.5	5.1	3,965.0	73.4	1,158.7	21.5	5,400.2
Social Services in Healthcare Institutions	48.0	7.5	295.9	46.3	294.9	46.2	638.8
Other	44.7	11.3	299.3	75.6	52.0	13.1	396.0
Total	2,070.0	7.0	22,382.3	75.7	5,126.1	17.3	29,578.4

Note: SW – social workers, SSW – social service workers, HW – healthcare workers

Table 3 shows that every sixth position among formal caregivers is attributed to a healthcare worker. The highest number of healthcare workers was in retirement homes (3,383 FTEs), where the proportion was almost 23%. The second-highest number was reached in extra care housing (1,159 FTEs). Further, the figures in Table 3 demonstrate that the largest proportion of healthcare workers among formal caregivers is in social services provided to clients in healthcare institutions. Specifically, the ratio of healthcare professionals was 46:54 in 2017.

3.2. Gender Structure (RQ3)

As most healthcare workers work in retirement homes and extra care housing, only these two social care services will be distinguished separately in this analysis and further ones. Table 4 introduces the percentages of women among healthcare workers in social care services by region. The regions are sorted according to their CZ-NUTS 3 codes.

The figures in Table 4 demonstrate that the vast majority of healthcare workers in social care services for the elderly in 2017 were women. At the regional level, the proportion ranged from 94.1% (Prague) to 99.1% (Liberec Region). When comparing the national proportions in the last row in Table 4, the proportion of women was slightly higher for healthcare workers in retirement homes (97.1% vs 96.6%).

Table 4. The regional proportion of women among healthcare workers in social care services for the elderly, separately for retirement homes and extra care housing.

Constituency	Social care services	Retirement homes	Extra care housing
Prague	94.1	94.5	93.6
Central Bohemia Region	96.2	96.3	97.3
South Bohemia Region	95.4	96.5	98.0
Plzeň Region	96.9	97.4	94.6
Karlovy Vary Region	94.9	96.1	91.0
Ústí nad Labem Region	97.1	98.2	94.5
Liberec Region	99.1	99.8	97.7
Hradec Králové Region	99.0	99.0	98.9
Pardubice Region	98.4	98.4	98.1
Vysočina Region	98.1	98.2	99.9
South Moravia Region	96.9	97.5	97.2
Olomouc Region	97.4	97.0	98.8
Zlín Region	98.5	98.4	98.8
Moravian-Silesian Region	96.5	97.4	94.7
Czech Republic	96.6	97.1	96.3

3.3. Age Structure (RQ4)

Table 5 shows the average age of healthcare workers in social care services for the elderly by region. Table 6 presents the share of these workers aged 50 and over (50+) and aged 60 and over (60+). In both calculations, the workload of the individual employees was taken into account. The average age of healthcare workers in the Czech Republic in 2017 was 46.7 years old. Regional averages ranged from 44.9 years old (Pardubice Region) to 48.5 years old (Liberec Region) while 44.5% of healthcare workers in social care services for the elderly were 50+. In addition, 10.3% of healthcare workers were 60+. It is worth noting that in extra care housing, the age of the healthcare workers is slightly more favorable.

Table 5. The regional average age of healthcare workers in social care services for the elderly, separately for retirement homes and extra care housing.

Constituency	Social care services	Retirement homes	Extra care housing
Prague	46.6	48.0	42.1
Central Bohemia Region	46.6	47.8	43.3
South Bohemia Region	45.4	44.9	44.5
Plzeň Region	46.4	46.1	44.5
Karlovy Vary Region	48.4	49.7	45.5
Ústí nad Labem Region	45.7	46.0	47.0
Liberec Region	48.5	48.6	48.3
Hradec Králové Region	47.2	47.0	48.7
Pardubice Region	44.9	45.2	45.0
Vysočina Region	46.8	46.6	47.4
South Moravia Region	47.4	48.3	46.7
Olomouc Region	47.1	47.1	47.4
Zlín Region	45.9	46.0	46.2
Moravian-Silesian Region	47.5	48.1	46.8
Czech Republic	46.7	47.1	45.4

Table 6. Regional percentages of 50+ and 60+ healthcare workers in social care services for the elderly, both separately for retirement homes and extra care housing.

Constituency	Social care services		Retirement homes		Extra care housing	
	50+	60+	50+	60+	50+	60+
Prague	47.1	17.4	52.8	20.6	31.5	11.6
Central Bohemia Region	42.3	9.8	45.8	11.2	33.1	5.8
South Bohemia Region	39.7	6.0	36.5	5.9	42.1	3.7
Plzeň Region	43.7	17.1	44.1	17.0	34.4	15.1
Karlovy Vary Region	51.6	18.9	54.4	21.8	47.0	10.8
Ústí nad Labem Region	41.0	8.1	42.1	8.4	46.5	8.5
Liberec Region	51.4	5.4	48.0	6.4	57.6	3.5
Hradec Králové Region	46.0	9.7	45.3	9.2	51.4	12.2
Pardubice Region	42.6	5.3	43.5	5.9	43.8	3.6
Vysočina Region	44.0	8.7	43.6	9.3	44.0	4.5
South Moravia Region	46.4	9.0	48.9	10.7	46.0	7.1
Olomouc Region	47.0	7.5	47.1	7.9	47.8	5.1
Zlín Region	42.1	6.7	42.8	6.0	43.9	11.3
Moravian-Silesian Region	44.3	11.6	46.6	12.3	42.7	10.0
Czech Republic	44.5	10.3	45.7	10.8	41.5	8.0

3.4. Average Monthly Salary (RQ5)

Based on the acquired data, the average gross monthly salary of healthcare workers in social care services for the elderly was CZK 30,404 in 2017, more specifically CZK 31,837 in retirement homes, and CZK 30,600 in extra care housing. Regional differences are illustrated in Table 7, which shows that the average monthly salary of healthcare workers in social care services for the elderly ranged from CZK 20,573 (Plzeň Region) to CZK 33,262 (Olomouc Region).

Table 7. The regional average monthly salary (in CZK) of healthcare workers in social care services (separately for retirement homes and extra care housing) and healthcare services.

Constituency	Social care services	Retirement homes	Extra care housing	Healthcare services
Prague	28,459	29,515	30,641	42,051
Central Bohemia Region	28,195	32,544	22,817	35,404
South Bohemia Region	31,462	33,500	34,661	31,208
Plzeň Region	20,573	23,436	24,658	40,292
Karlovy Vary Region	32,362	33,035	34,675	30,011
Ústí nad Labem Region	29,682	30,315	33,762	30,559
Liberec Region	31,958	31,127	33,521	34,774
Hradec Králové Region	32,297	32,615	33,702	37,124
Pardubice Region	29,738	29,065	29,856	31,132
Vysočina Region	32,221	31,386	38,969	33,449
South Moravia Region	32,383	34,413	32,134	35,685
Olomouc Region	33,262	33,794	30,751	37,164
Zlín Region	29,669	28,797	35,259	32,551
Moravian-Silesian Region	31,241	33,511	27,432	35,521
Czech Republic	30,404	31,837	30,600	37,260

For comparison, the last column in Table 7 shows the monthly salaries in health care published by the Institute of Health Information and Statistics of the Czech Republic (2018).

Regional salaries in social care services do not correlate positively with regional salaries in healthcare services ($r = -0.43$).

4. Discussion

To compare the Czech Republic with other European countries, we used section Q (ISIC Rev. 4 classification) of human health and social work activities. According to ILOSTAT (2020), section Q reached 7.2% of total employment in the Czech Republic in 2017 and 7.4% in 2019. These proportions are rather low in contrast to the European Union (28 countries), where it was 11.0% for 2017 and 11.2% for 2019. In neighboring Germany, the monitored proportions were 12.9% and 13.2%.

4.1. Qualification Structure

In the Czech Republic, the basic prerequisite for the reimbursement of healthcare services provided in residential social service facilities by insurance companies is the existence of a contract signed between these facilities and the insurance company. Nursing and medical care in residential social service facilities can be reimbursed only if provided by qualified staff and a general practitioner under the conditions stipulated in the list of medical interventions (Malíková, 2020). Ideally, this prerequisite should guarantee the quality of services received in the institutions, which is a positive regulatory aspect by the state. However, it also has a substantial financial impact because to be able to attract a qualified workforce, it needs to go hand in hand with appropriate salary bands.

Based on our analysis, a total of 5,126 FTEs provided healthcare in social care services in 2017, with 1,988,922 people aged 65 and over living in the Czech Republic (Czech Statistical Office, 2020). In 2050, 3,075,587 such old people are expected (Czech Statistical Office, 2020), which is 55% more. Thus, to ensure the same care as in 2017, this requires 2,801 more healthcare workers in social care services.

The highest number of full-time healthcare jobs within the total number of recalculated healthcare personnel workloads in social care services includes general nurses and physical therapists, which are highly specialized skill sets. In addition, there is a shortage of these non-medical health professionals in the Czech Republic (Marešová et al., 2020c). Kubalčíková and Havlíková (2016) also draw attention to the lack of qualified formal caregivers in the Czech Republic and the possible consequences in the form of the establishment of unregistered care homes, where the required quality of care is not guaranteed.

4.2 Demographic Structure

When examining the data from 2017, the average age of healthcare workers in social care services for the elderly in the Czech Republic was 46.7 years old. Regional averages ranged from 44.9 years old (Pardubice Region) to 48.5 years old (Liberec Region). In addition, 44.5% of healthcare workers in social care services for the elderly were 50 years or older and 10.3% of healthcare workers were 60 years or older. This illustrates that the changing demographic will not only influence the need for care but also a workforce that can provide it while an active employment policy will also be required.

From the gender perspective, it is interesting to note that the vast majority of the healthcare workers in social care services for the elderly are women ranged from 94.1% to 99.1% across the regions. Similar gender distribution was found for social service workers, although the profession of formal caregiver is not perceived by Czech society as gender-segregated (Marková et al., 2020). For comparison, Schulz (2013) demonstrated that the proportion of women in section Q of human health and social work activities is 4.6 percentage points (pp) lower in Germany than in the Czech Republic; for residential care activities, the difference is 10.8 pp.

4.3 Economic Situation

Based on the acquired data, the average gross monthly salary of healthcare workers in social care services for the elderly was CZK 30,404 in 2017. Despite the high demands on healthcare workers in social care services, their salaries do not correspond to this. The calculated average gross monthly salary was 3% above the national average across all economic activity sectors, which amounted to CZK 29,504 (Czech Statistical Office, 2018). Salaries in social services have risen in recent years, but this segment still lags behind others (Institute of Health Information and Statistics of the Czech Republic & Institute of Biostatistics and Analyses, 2018). One of the consequences is that Czech healthcare workers and other formal caregivers work abroad due to better financial conditions, namely in neighboring Germany and Austria (Mareckova, 2004; Drbohlav & Pavelková, 2018).

4.4 Limitations

The presented results have some limitations. Only those social care services that mentioned seniors as a target group were included in our study. However, this does not mean that other services cannot be used by the elderly. It should also be noted that the regions in the dataset indicated the official seat of the service provider; however, the service may be provided in another region.

The calculation of the average monthly salary must also be understood with some reserve. The total average monthly costs for all the considered healthcare workers in the region were divided by 1.34, which assumes the employer's statutory social and health insurance contributions for all employees. However, this may not have been the case for all workers, as some may have been employed on a contract basis or have had a small-scale job. Thus, the calculated averages may be slightly underestimated.

Finally, it should be noted that our results are only related to one year, namely 2017. Therefore, in the future, we plan to perform the data analysis over a longer period and also make a larger international comparison of our results.

5. Conclusions

Population projections in all European countries show that the population is aging and has an increased life expectancy. Nevertheless, each country is approaching this population change differently and at different speeds. Based on the available data, the Czech Republic still needs to work hard to adapt to this change to make sure the population receives the

necessary services provided by sufficiently professional staff. The Czech elderly care system needs fundamental structural change so the health and social care sectors cooperate more openly. There is also a need for a transparent financing model and to be able to attract the relevant workforce.

It is desirable for health and social care systems to make a joint effort to deliver support to the people in need promptly and, at the same time, leverage financial savings from synergy, which can be obtained from a better process overview, and eliminate redundancies in the infrastructure. In addition, open and interconnected data on the care provided would allow for faster research in this important area and, consequently, for more accurate estimates of the capacity needed and the financial burden of elderly care.

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References

- Act No. 108/2006 Coll., *On social services*. Czech Republic, The Parliament of the Czech Republic.
<https://www.mpsv.cz/pravni-predpisy-pro-socialni-sluzby>
- Czech Statistical Office. (2018). *Average wages - 4th quarter of 2017* [Data set]. Retrieved January 8, 2021, from <https://www.czso.cz/csu/czso/ari/average-wages-4-quarter-of-2017>
- Czech Statistical Office. (2020). *Population of the Czech Republic Prediction until 2101* [Data set]. Retrieved December 18, 2020, from https://www.czso.cz/staticke/animgraf/projekce_1950_2101/
- Drbohlav, D., & Pavelková, L. (2018). Intra-European Movement of Czechs with Special Regard to Austria and Care Givers (The “MICO” Type-Between Migration and COmmuting). In P. Scholten, & M. van Ostaijen (Eds.), *Between Mobility and Migration* (pp. 205–226). Springer Open.
- Duvall, J. J., & Andrews, D. R. (2010). Using a structured review of the literature to identify key factors associated with the current nursing shortage. *Journal of Professional Nursing*, 26(5), 309–317.
<https://doi.org/10.1016/j.profnurs.2010.02.002>
- Hackmann, T. (2010). Entwicklung der professionellen Pflege vor dem Hintergrund des demografischen Wandels. In A. Nienhaus (Ed.), *Gefährdungsprofile-Unfälle und arbeitsbedingte Erkrankungen im Gesundheitsdienst und Wohlfahrtspflege* (pp. 96–112). Ecomed MEDIZIN.
- Harling, M., Schablon, A., & Nienhaus, A. (2014). Validierung der Nurse-Work-Instability-Scale-Ergebnisse der Baseline – Befragung einer prospektiven Studie an einer Kohorte von Altenpflegekräften. In A. Nienhaus (Ed.), *RiRe - Risiken und Ressourcen in Gesundheitsdienst und Wohlfahrtspflege* (pp. 115–135). Ecomed MEDIZIN.
- ILOSTAT. (2020). *Employment Distribution by economic activity (by sex)* [Data set]. Retrieved January 8, 2020 from https://www.ilo.org/shinyapps/bulkexplorer34/?lang=en&segment=indicator&id=EMP_2EMP_SEX_ECO_DT_A
- Institute of Health Information and Statistics of the Czech Republic. (2018). *Zdravotnická ročenka České republiky 2017*. (Annual Report). Institute of Health Information and Statistics of the Czech Republic.
<https://www.uzis.cz/index-en.php?pg=record&id=8166>
- Institute of Health Information and Statistics of the Czech Republic & Institute of Biostatistics and Analyses. (2018). *Zdravotnictví ČR: Personální kapacity a odměňování 2017*. (Report). Institute of Health Information and Statistics of the Czech Republic. <https://www.uzis.cz/index.php?pg=record&id=8147>
- Komárková, L., Truhlářová, Z., & Marešová, P. (2020). Structure of Clients in Residential Social Services for the Elderly: A Regional Analysis. In P. Jedlička, P. Marešová, K. Fírlaj, & I. Soukal (Eds.), *Proceedings of the international scientific conference Hradec Economic Days 2020* (pp. 327–335). University of Hradec Králové.
<https://doi.org/10.36689/uhk/hed/2020-01-038>
- Kubalčíková, K., & Havlíková, J. (2016) Current Developments in Social Care Services for Older Adults in the Czech Republic: Trends Towards Deinstitutionalization and Marketization, *Journal of Social Service Research*, 42(2), 180–198. <https://doi.org/10.1080/01488376.2015.1129014>

- Langhamrová, J., Šimková, M., & Sixta, J. (2018). Makroekonomické dopady rozšiřování sociálních služeb pro stárnoucí populaci České republiky. *Politická ekonomie*, 66(2), 240–259. <https://doi.org/10.18267/j.polek.1186>
- Malíková, E. (2020). *Péče o seniory v pobytových zařízeních sociálních služeb* (2nd ed.). Grada Publishing.
- Mareckova, M. (2004). Exodus of Czech doctors leaves gaps in health care. *The Lancet*, 363(9419), 1443–1446. [https://doi.org/10.1016/S0140-6736\(04\)16137-0](https://doi.org/10.1016/S0140-6736(04)16137-0)
- Maresova, P., Komarkova, L., Kuhnova, J., Cimler, R., Pazitny, P., Kandilaki, D., Musilek, K., Truhlarova, Z., Zemek, F., & Kuca, K. (2020a). Anticipated Social and Healthcare Economic Burden of People with Alzheimer's Disease in Two Selected Regions of the Czech Republic. *Healthcare*, 8(4), 433. <https://doi.org/10.3390/healthcare8040433>
- Maresova, P., Lee, S., Fadeyi, O. O., & Kuca, K. (2020b). The social and economic burden on family caregivers for older adults in the Czech Republic. *BMC geriatrics*, 20, 171. <https://doi.org/10.1186/s12877-020-01571-2>
- Maresova, P., Prochazka, M., Barakovic, S., Baraković Husić, J., & Kuca, K. (2020c). A Shortage in the Number of Nurses—A Case Study from a Selected Region in the Czech Republic and International Context. *Healthcare*, 8(2), 152. <https://doi.org/10.3390/healthcare8020152>
- Marková, A., Komárková, L., & Truhlářová, Z. (2020). The Perception of the Care Work and Its Importance: A Pilot Study. *Czech and Slovak Social Work*, 20(1), 33–44.
- Ministry of Labor and Social Affairs. (2014). *Národní akční plán podporující pozitivní stárnutí pro období let 2013 až 2017: Aktualizovaná verze k 31. 12. 2014*. (Report). Ministry of Labor and Social Affairs. https://www.mpsv.cz/documents/20142/953091/NAP_CZ_web.pdf/26116d05-2319-aa67-831e-f5a33881dcb1
- Ministry of Labor and Social Affairs. (2016). *Národní strategie rozvoje sociálních služeb na období 2016–2025*. (Report). Ministry of Labor and Social Affairs. <https://www.mpsv.cz/documents/20142/577769/NSRSS.pdf/af89ab84-31ac-e08a-7233-c6662272bca0>
- Průša, L. (2015). Důsledky stárnutí populace na potřebu služeb sociální péče do roku 2030. *Demografie*, 57(3), 231–244.
- Schönrock, S., Schablon, A., Nienhaus, A., & Peters, C. (2015). What do healthcare workers in elderly care know about occupational health and safety? An explorative survey. *Journal of Occupational Medicine and Toxicology*, 10(1), 1–11. <https://doi.org/10.1186/s12995-015-0079-0>
- Schulz, E. (2013). *Employment in Health and Long-Term Care Sector in European Countries* (NEUJOBS Working Paper, No. D12.1, Suppl. A). Deutsches Institut für Wirtschaftsforschung, Berlin. http://www.neujobs.eu/sites/default/files/Health%20care%20workforce-EU-160913_final.pdf
- Skela-Savič, B., Gotlib, J., Panczyk, M., Patelarou, A. E., Bole, U., Ramos-Morcillo, A. J., Finotto, S., Mecugni, D., Jarosova, D., Patelarou, E., Dolezel, J., & Ruzafa-Martínez, M. (2020). Teaching evidence-based practice (EBP) in nursing curricula in six European countries—A descriptive study. *Nurse Education Today*, 94, 104561. <https://doi.org/10.1016/j.nedt.2020.104561>
- Vrabková, I., Ertingerová, I., & Kukuliač, P. (2021). Determination of gaps in the spatial accessibility of nursing services for persons over the age of 65 with lowered self-sufficiency: Evidence from the Czech Republic. *Plos One*, 16(1), e0244991. <https://doi.org/10.1371/journal.pone.0244991>