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Informal caregiving, work-privacy conflict and burnout among health professionals in Switzerland – a cross-sectional study

Häusler Nadine, Bopp Matthias, Hämmig Oliver

Epidemiology, Biostatistics and Prevention Institute, University of Zürich, Switzerland

Summary

INTRODUCTION: Health professionals were found to have an elevated burnout risk compared to the general population. Some studies also reported more emotional exhaustion – a component of burnout – for health professionals with informal caregiving responsibilities for children (double-duty child caregivers) or adults (double-duty adult caregivers) or a combination of both (triple-duty caregivers) compared to health professionals without informal caregiving roles (formal caregivers). However, the potential mediating effect of the work-privacy conflict in this relationship as well as differences between occupational groups have not yet been studied in healthcare settings.

AIM: To assess the impact of informal caregiving on burnout risk among health professionals and whether this relationship is mediated by work-privacy conflict or differs between occupational groups.

METHODS: Data were collected through an employee survey in six hospitals from German-speaking Switzerland in 2015/2016. Mediation analyses were performed using linear mixed models with fixed effects for caregiving situation and work-privacy conflict as well as random effects for hospitals.

RESULTS: Triple-duty caregivers were found to have a significantly higher burnout risk compared to formal caregivers only. Work-privacy conflict did not mediate this relationship, except among the "other health professionals" group.

CONCLUSION: Additional and large-scale studies focusing on the combination of formal and informal caregiving roles are needed to better understand its effect on burnout among healthcare professionals and to evaluate the role of work-privacy conflict.

Key words: *burnout risk, double-duty caregiving, triple-duty caregiving, work-privacy conflict, health professionals*

Correspondence:
Nadine Häusler, Epidemiology, Biostatistics and Prevention Institute, University of Zürich, Hirschengraben 84, CH-8001 Zürich, nadine.haeusler[at]uzh.ch

Introduction

Burnout is a stress-induced illness and can be described as a psychological syndrome comprising physical and psychological fatigue as well as exhaustion [1]. It often occurs in human service professionals including physicians, psychiatrists, nurses, teachers as well as social workers [2] and results in adverse individual health outcomes such as psychosomatic disorders as well as negative work-related attitudes such as job dissatisfaction, poor performance, absenteeism and turnover [3]. Predictors of burnout are adverse and emotionally demanding working environments [1] as well as long-lasting work stressors [4]. Burnout may not only emerge from work-specific stressors but also from inter-role conflicts between work and private life [5, 6]. Stress resulting from these competing demands between work and private life may carry over from work to private life or in the opposite direction – from private life to work. This work-privacy conflict is considered as an indicator of general psychological stress. As burnout is conceptually the result of adverse working conditions [4], work-specific stressors can theoretically be expected to be more strongly associated with burnout than work-privacy conflict. Despite this theoretical reasoning, the work-privacy conflict was found to be a stronger predictor in a study directly comparing the effect of a work-specific stressor and work-privacy conflict on burnout [6].

Formal caregivers

Population ageing has led to an increase in the demand for healthcare services and consequently for healthcare professionals. These "formal" caregivers are exposed to many occupational stressors [7] that result in stress and subsequently burnout [8]. Healthcare professionals are among the professions that are especially vulnerable to burnout [9], with burnout rates varying between healthcare occupations [6, 9–11]. Studies have repeatedly shown high rates of burnout in nurses [12, 13] and physicians [14, 15] with a higher proportion of persons at increased burnout risk among physicians than among other hospital staff [6]. However most studies on burnout in healthcare settings focus on single occupational groups and neglect to directly compare different healthcare professions. A U.S. study reported that more than 50% of physicians show symptoms of professional burnout and estimated an increase in the prevalence of physician burnout of 10% from 2011 to 2014

[9]. Burnout in healthcare settings is not only a threat to patients' safety [16] but diminishes the quality of care [9] and the continuity of care due to high turnover [17].

Informal caregivers

Not only has the demand for formal professional healthcare risen, but so has the need for informal caregiving [8] especially in view of a possibly under-resourced healthcare system in Switzerland in the future [18]. Informal caregivers provide voluntarily unpaid care in their leisure time. Similarly to formal caregivers, informal caregivers are confronted with various physical and mental health problems [19, 20]. They have higher stress hormone levels [21], perceive more stress [22], and report lower psychological wellbeing [23] than non-caregivers. While the link between informal caregiving and stress is well documented, evidence for the association between informal caregiving and burnout is less investigated.

Double- and triple-duty caregivers

Health professionals providing informal care are called double-duty caregivers. We may distinguish between double-duty caregivers providing informal care to dependent children (double-duty child caregivers) or to parents, older relatives or other dependent adults (double-duty adult caregivers) and those who are sandwiched between informal caregiving roles and their formal caregiving role (triple-duty caregivers) (fig. 1). Although increasingly prevalent [19, 20, 24, 25], double- and triple-duty caregivers remain an understudied workforce population [20]. Whereas double- and triple-duty caregivers are associated with negative health outcomes [19, 24] and more work-family conflict than non-caregivers [19, 20, 26, 27], evidence for a link between double- and triple-duty caregivers and burnout is scarce. However, the link between emotional exhaustion, which is a component of burnout, has been documented for double-duty caregivers in the Netherlands [19, 26] and double- and triple-duty caregivers in the U.S [27–29]. Studies assessing burnout risk of double- and triple-duty caregivers neglect to differentiate between healthcare professions, despite differences in burnout risk [6, 9–11]. Moreover, to our knowledge studies considering work-privacy conflict as a mediator in the relationship between caregiving situation and burnout are currently lacking.

Theoretical framework

Role theory provides two opposing hypotheses as to how caregiving can affect burnout through stress: role strain and role enhancement. The role strain hypothesis postulates negative effects for informal caregivers as such additional roles compete for a finite set of resources and hence lead to role overload and/or time scarcity [30]. According to the role strain hypothesis, double-duty caregivers have higher and triple-duty caregivers the highest stress levels and hence burnout risk compared to formal caregivers only. Conversely, the role enhancement suggests positive effects of additional roles (such as informal caregiving) due to status security and enhancement, role privileges and personality enrichment [31]. According to the role enhancement hypothesis, double- and triple-duty caregivers are expected to have a comparable or even lower risk of burnout than formal caregivers only.

In view of the relatively high burnout rate of healthcare professionals [3] and the higher susceptibility to medical errors of "burnt out" healthcare professionals [32], it is crucial to disentangle the mechanisms behind formal and informal caregiving roles and burnout. While the associations between formal caregiving [3] and to some extent informal caregiving and burnout [19, 26–29] have been established, we aim to investigate the effect of informal caregiving roles on burnout in the hospital setting and to assess whether work-privacy conflict mediates this relationship in different health professions (fig. 2).

Hence we aimed to answer the following research questions:

1. Is informal caregiving a predictor for burnout among health professionals?
2. Is the effect of informal caregiving on burnout risk mediated by work-privacy conflict?
3. Are there differences in the association of informal caregiving groups with burnout risk and in the potential mediation of work-privacy conflict between professional groups?

Materials and methods

Data

Data stemmed from an anonymous employee survey on working conditions and health of hospital employees in German-speaking Switzerland (n = 1406). The questionnaire contained 100 questions concerning working conditions, satisfaction and wellbeing at work, personal resources, multiple roles, health and general wellbeing (see appendix 1). It was sent to all permanent employees of the six hospitals including a university hospital, a cantonal hospital, two district hospitals and two rehabilitation clinics. Hospitals varied not only regarding size ranging from 473 to 2182 permanent employees, but also regarding the degree of specialisation and urbanisation of catchment area. The employees had four weeks to return the questionnaire with the enclosed postage-paid envelope to the Uni-

Figure 1: Classification of caregiving groups.

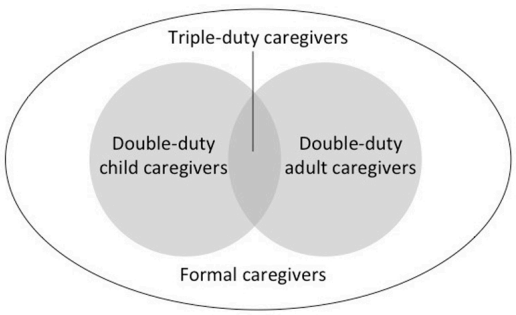
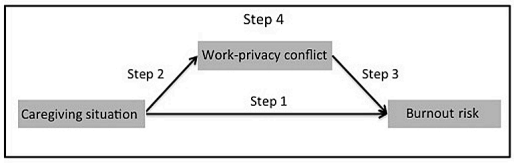


Figure 2: Analytical framework to investigate the effect of caregiving of burnout risk: four-step mediation analyses.



versity of Zurich. A reminder was sent to all employees three weeks after initial distribution.

Measurements

Burnout risk was assessed with the validated German version of the personal burnout scale [33] from the Copenhagen Burnout Inventory (CBI) [1]. This scale contained six questions (e.g., "How often are you physically exhausted?") concerning the prolonged physical and psychological fatigue with five answer categories ranging from "always" (100), "often" (75), "sometimes" (50), "seldom" (25) to "never/almost never" (0). The sum score of the items was divided by the number of items answered whereas at least three items had to be answered in order to be included in the analyses. Hence a burnout score of 50 and above indicated having an increased risk or developing burnout. In the original Danish validation study of the CBI, the average burnout score was 33 [34] whereas the reference score of the German validation study was 42 [35].

We categorised the study population into four caregiving groups depending on the additional informal caregiving roles (see fig 1). Questions about informal caregiving roles stemmed from the national module of unpaid work, which is included every third year in the Swiss Labour Force Survey (SAKE). Our reference group of formal caregivers was defined by having no informal caregiving role for dependent children or adults. Participants who reported living with at least one minor (i.e., under 18 years old) in the same household were classified as double-duty child caregivers (DDCC). Individuals reporting to provide informal care to a related adult or another adult living outside of the household or living in the same household with an adult person in need of care were categorised as double-duty adult caregivers (DDAC). Study participants facing both of these informal caregiving roles i.e., living in a household with at least one underage child and providing informal adult care, were classified as triple-duty caregivers (TDC). Due to small numbers of cases, the following professional categories were formed: nursing professionals (including midwives), medical doctors and other health professionals (including medical-therapeutic experts, medical-technical experts, academic staff).

For work-privacy conflict, we used the work-privacy conflict scale (WPC) from the German version of the Copenhagen Psychosocial Questionnaire (COPSOQ) [33], which is an adapted version of the work-family conflict scale [36] measuring inter-role conflict between private life and work. Despite this bidirectional concept, the WPC scale measures solely the conflict between work and private life, and not the other direction. It consists of five items (e.g., "The demands of my work interfere with my private and family life," with answer categories ranging from "I totally agree" (100), "I agree" (75), "neither agree nor disagree" (50), "I disagree" (25), to "I totally disagree" (0). The sum score of all items was divided by the number of items answered. At least three items had to be answered in order for the value to be considered. The higher the score on WPC, the greater the conflict between work and private life.

Statistical analyses

We used descriptive statistics to characterise the study population according to burnout risk. We assessed the effect of the caregiving situation on burnout risk and tested WPC as a potential mediator in this association by using a four-step mediation analyses [37] (see fig. 2). According to Baron and Kenny [37], mediation will take place if the following conditions are fulfilled: the independent variable had a significant effect on the dependent variable (step 1) and on the mediator (step 2), the mediator had a significant effect on the dependent variable (step 3) and the effect of the independent variable on the dependent variable diminished when the mediator was included in the analysis (step 4). Hence, in step 1 we estimated the effect of the caregiving situation on burnout risk. In a second step (step 2), we investigated the effect of the caregiving situation on WPC as the dependent variable. This step was necessary to test whether the initial variable caregiving situation was associated with the potential mediator. Next, we analysed the effect of the potential mediator WPC on burnout risk (step 3). In step 4, we included WPC in the initial analyses that assessed the effect of the caregiving situation on burnout risk. In all steps, we controlled for age, sex, marital status, education and work volume. We performed linear mixed regression models with fixed effects for caregiving groups and random effects for hospitals to allow for clustering of results within each hospital. For our third research question, we performed linear mixed regression models stratified for professional group with the same four-step approach to test for mediation [37]. Akaike's Information Criterion indicated a better model fit for linear mixed models compared to linear regression as well as best model fit for step 4.

Results

In total, 1844 questionnaires were returned (41%). In order to have a study population of formal caregivers, we restricted the study to health professionals (n = 1441) with complete information on all variables of interest (n = 1406), resulting in a study population of 1232 women (88%) and 174 men (12%) (table 1). Most participants were nurses (61%), followed by other health professionals (23%) and medical doctors (16%). The majority of the participants were formal caregivers only (60%), DDCCs (32%) were the second largest caregiving group followed by DDACs (6%) and TDCs (2%). The average burnout risk score was 40.3 in females and 37.4 in males. With the exception of male DDACs (only 4 participants), all caregiving groups had a mean burnout score below the cut-off point at score 50 for an increased burnout risk. No clear burnout risk pattern for the caregiving groups was found. Whereas female TDCs had a higher unadjusted mean burnout score compared to formal caregivers only, the unadjusted means for female DDCCs and DDACs were lower compared to the formal caregivers only. In the male study population DDACs had a higher mean burnout score compared to the formal caregivers only (but based on only four participants and statistically not significant), whereas DDCCs had a comparable burnout risk score to the formal caregivers only.

We found a steep and consistent gradient for the association between WPC score and burnout risk score in both sexes that reflected the relatively low unadjusted mean burnout score for the lowest WPC quartiles and the elevated mean burnout score for the highest WPC quartile.

Effect of caregiving situation on burnout risk

Whereas the burnout risk score (ranging from 0–100) for DDCCs and DDACs did not significantly differ from the formal caregivers only, TDCs had a higher mean burnout score compared to the formal caregivers only (tables 1 and 2). In a multivariate linear mixed regression analysis (table 2), TDCs had an 8.39 (CI 2-29–14.49) higher mean burnout score than formal caregivers only (step 1).

Potential mediating effect of WPC

Only DDCCs had a significantly higher WPC score compared to the formal caregivers only (step 2 in table 2). The regression of WPC on burnout risk (step 3) revealed a significant positive association: with every unit increase on the WPC scale ranging from 0–100, the mean burnout score increased by 0.36 (CI 0.33–0.39). Although the inclusion of WPC in step 4 lowered the coefficient of TDCs, TDCs still had a significantly higher mean burnout score 5.98 (CI 0.78–11.19) compared to the formal caregivers only, and WPC was a predictor for burnout score.

Table 1: Average burnout risk score for women and men, unadjusted.

	Women			Men		
	N	Burnout risk (0–100)		N	Burnout risk (0–100)	
Total study population	1232	40.2	(39.3–41.2)	174	37.4	(34.5–40.3)
Age						
Under 25	82	45.5	(42.3–48.7)	4	40.6	(18.7–62.5)
25–34	386	41.7	(40.1–43.3)	39	38.2	(31.7–44.8)
35–44	313	42.0	(40.2–43.8)	46	40.1	(34.2–45.9)
45–54	288	37.5	(35.6–39.3)	58	34.6	(29.8–39.5)
55+	163	35.8	(33.3–38.5)	27	34.9	(27.7–42.1)
Marital status						
Married	592	38.5	(37.1–39.7)	102	35.6	(31.8–39.4)
Single	518	42.8	(41.4–44.2)	58	40.1	(35.1–45.0)
Divorced/widowed	122	37.6	(34.7–40.5)	14	35.2	(25.6–44.7)
Education						
Primary	31	39.7	(32.8–46.5)	1	20.8	–
Secondary	385	38.9	(37.2–40.5)	22	33.5	(24.9–42.2)
Tertiary	816	40.9	(39.8–41.9)	151	37.7	(34.6–40.7)
Work volume						
100%	376	43.0	(41.3–44.6)	122	36.0	(32.6–39.5)
80–99%	323	39.6	(37.9–41.3)	36	39.4	(33.4–45.3)
50–79%	328	39.0	(37.1–41.8)	13	40.4	(26.4–54.3)
30–49%	166	39.4	(36.9–41.8)	1	33.3	–
under 30%	39	32.4	(27.7–37.1)	2	39.6	–
Professional category						
Nursing professionals	807	39.6	(38.5–40.7)	47	35.4	(29.2–38.5)
Medical doctors	148	42.9	(40.4–45.5)	83	38.7	(34.5–42.9)
Other health professionals	277	40.6	(38.6–42.6)	44	37.4	(30.9–43.9)
Caregiving group						
Formal caregiver	747	40.4	(39.2–41.6)	102	36.2	(32.6–39.8)
Double–duty child caregiver	379	39.9	(38.3–41.5)	66	37.4	(32.6–42.2)
Double–duty adult caregiver	78	36.9	(33.9–39.9)	4	52.1	(4.7–99.4)
Triple duty caregiver	28	46.6	(40.1–51.2)	2	39.6	–
Work Privacy Conflict score						
Lowest quartile	353	30.1	(28.6–31.5)	47	25.5	21.6–29.3
Second lowest quartile	356	38.8	(37.3–40.2)	44	31.0	25.8–36.1
Second highest quartile	228	43.6	(41.8–45.4)	42	42.0	38.0–48.3
Highest quartile	295	51.4	(49.7–53.2)	41	51.9	46.9–59.7

Table 2: Burnout risk for caregiving groups: four-step mediation analyses*.

	N	Step 1		Step 2 (WPC)		Step 3		Step 4	
		Coef.	CI (95%)	Coef.	CI (95%)	Coef.	CI (95%)	Coef.	CI (95%)
Caregiving group									
Formal caregivers†	849	0		0				0	
DDCC	445	0.65	−1.78–3.08	**3.65**	0.10–7.19			−0.69	−2.76–1.39
DDAC	82	−0.17	−3.90–3.56	4.58	−0.85–10.02			−1.82	−5.001–1.36
TDC	30	**8.39**	2.29–14.49	6.53	−2.36–15.42			**5.98**	0.78–11.19
Work-Privacy Conflict score (0–100)	1406					**0.36**	0.33–0.39	**0.36**	0.33–0.39

CI = confidence interval; Coef. = coefficient; DDAC = double-duty adult caregivers; DDCC = double-duty child caregivers; TDC = triple-duty caregivers * Adjusted for age, sex, marital status, education and work volume † Without informal caregiving roles

Nursing professionals

Whereas nurse DDCCs and DDACs did not significantly differ in their burnout score from the formal caregivers only, TDCs had a significantly higher mean burnout score of 7.5 (CI 0.45–14.57) compared to formal caregivers only (step 1 in table 3). DDCCs, DDACs and TDCs did not differ significantly in their WPC from formal caregivers only (step 2). WPC was a predictor for nursing professionals' burnout score (step 3). The adjustment for WPC in step 4 suggested that nurse TDCs had a higher mean burnout score of 6.9 (CI 0.90–12.90) compared to formal caregivers only, with WPC also playing a significant role.

Medical doctors

The caregiving situation did not have an effect on burnout score nor on WPC (step 1 and 2 in table 4). WPC significantly predicted medical doctors' burnout score (step 3). The caregiving groups did not differ in their burnout score when additionally adjusted for WPC (step 4). However WPC had a significant effect on the burnout score of medical doctors.

Other health professionals

TDCs had a significantly higher mean burnout score (coef. 21.55, CI 4.28–38.82) compared to formal caregivers only (step 1 in table 5). The caregiving situation did not predict WPC in other health professionals (step 2) with the exception of TDCs. TDCs had a significantly higher WPC compared to formal caregivers only (coef. 23.68, CI 0.30–47.06). WPC predicted burnout score in other health professionals (step 3). The inclusion of WPC lowered the regression coefficient of TDCs burnout risk (coef. 12.86, CI -2.01–27.83) and their burnout score was not significantly higher compared to the formal caregivers only (step 4). WPC was a predictor for burnout score in other health professionals.

Discussion

We found that, among health professionals, informal adult caregiving in combination with being a parent (TCDs) had a negative impact on burnout risk. WPC only mediated the relationship between TDCs and burnout risk in "other health professionals".

The results of the analyses regarding our first research question showed that not all informal caregiving roles were associated with an elevated burnout risk compared to for-

Table 3: Burnout risk for caregiving groups of nursing professionals: four-step mediation analyses*.

	N	Step 1		Step 2 (WPC)		Step 3		Step 4	
		Coef.	CI (95%)	Coef.	CI (95%)	Coef.	CI (95%)	Coef.	CI (95%)
Caregiving group									
Formal caregivers†	512	0		0				0	
DDCC	269	−0.26	−3.25–2.73	0.43	−3.85–4.71			−0.41	−2.95–2.13
DDAC	52	−2.42	−6.94–2.09	2.77	−3.70–9.24			−3.47	−7.31–0. 7
TDC	21	**7.51**	0.45–14.57	1.39	−8.72–11.51			**6.90**	0.90–12.90
Work-Privacy Conflict score (0–100)	854					**0.37**	0.33–0.41	**0.37**	0.33–0.41

CI = confidence interval; Coef. = coefficient; DDAC = double-duty adult caregivers; DDCC = double-duty child caregivers; TDC = triple-duty caregivers * Adjusted for age, sex, marital status, education and work volume † Without informal caregiving roles

Table 4: Burnout risk for caregiving groups of medical doctors: four-step mediation analyses*.

	N	Step 1		Step 2 (WPC)		Step 3		Step 4	
		Coef.	CI (95%)	Coef.	CI (95%)	Coef.	CI (95%)	Coef.	CI (95%)
Caregiving group									
Formal caregivers†	138	0		0				0	
DDCC	79	−1.22	−7.85–5.57	5.07	−3.53–13.67			−3.63	−8.58–1.32
DDAC	9	1.00	−11.43–11.56	6.63	−9.01–21.72			−2.02	−10.86–6.83
TDC	5	1.42	−14.02–18.57	−0.43	−21.85–20.99			1.63	−10.68–13.94
Work-Privacy Conflict score (0–100)	231					**0.47**	0.40–0.54	**0.48**	0.40–0.55

CI = confidence interval; Coef. = coefficient; DDAC = double-duty adult caregivers; DDCC = double-duty child caregivers; TDC = triple-duty caregivers * Adjusted for age, sex, marital status, education and work volume † Without informal caregiving roles

Table 5: Burnout risk for caregiving groups of other health professionals: four-step mediation analyses*.

	N	Step 1		Step 2 (WPC)		Step 3		Step 4	
		Coef.	CI (95%)	Coef.	CI (95%)	Coef.	CI (95%)	Coef.	CI (95%)
Caregiving group									
Formal caregivers†	199	0		0				0	
DDCC	97	3.30	−2.13–8.72	5.49	−1.84–12.81			1.36	−3.34–6.06
DDAC	21	6.49	−1.42–14.41	10.24	−0.45–20.94			2.71	−4.17–9.58
TDC	4	**21.55**	4.28–38.82	**23.68**	0.30–47.06			12.86	−2.01–27.83
Work-Privacy Conflict score (0–100)	321					**0.38**	0.31–0.45	**0.37**	0.30–0.44

CI = confidence interval; Coef. = coefficient; DDAC = double-duty adult caregivers; DDCC = double-duty child caregivers; TDC = triple-duty caregivers * Adjusted for age, sex, marital status, education and work volume † Without informal caregiving roles

mal caregivers only. In contrast to other studies [19, 26], we did not find an elevated burnout risk for DDACs compared to formal caregivers only. There was evidence for TDCs having an increased risk of burnout compared to the formal caregivers only. This association has been found previously for TDCs and emotional exhaustion, which is a component of burnout [27–29]. Role strain resulting from informal and formal caregiving roles is expected due to energy scarcity [27]. However, as no dose-response relationship was found, the role strain hypothesis cannot explain why only TDCs revealed a higher burnout risk compared to the formal caregivers only. As DDCCs and DDACs did not have an increased burnout risk compared to formal caregivers only, we assumed that there may be a threshold for when additional caregiving roles cause role strain. Moreover, TDCs were found to struggle to manage professional and informal caregiving role boundaries [24]. Further risk factors for physical and mental health are the time demands of the multiple roles and the inability to separate work and life domains [25].

As regards our second research question, namely whether the effect of informal caregiving on burnout risk was mediated by WPC, we found evidence that WPC did not mediate this relationship. As only TDCs reveal an elevated burnout risk compared to formal caregivers only, we focused on the mediation in this significant relationship between TDCs and burnout. WPC did not mediate the relationship between TDCs and burnout risk because TDCs did not have a significantly higher WPC compared to formal caregivers only, which is a mandatory condition for mediation. However, the inclusion of WPC in step 4 lowered their burnout risk but TDCs had a higher burnout risk compared to the formal caregivers only. Nevertheless, work-related stress measured as WPC failed to explain the elevated burnout risk of TDCs. Therefore the triple caregiving situation itself or work-specific stressors as well as other factors such as time constraints [25], perceived schedule control [27], partner support or family-to-work conflict [29, 38] may be important in this relationship. As WPC lowered the burnout risk in TDCs, employer-based programs such as flexible working arrangements could help employees cope with their emotionally demanding caregiving situation [25]. Further interventions to facilitate the combination of work, caregiving duties and social activities, such as an adult day care service for adults in need of care, has been proven to reduce informal caregivers' stress and increase wellbeing [39].

Further, as regards our third research question, our results suggest that the effect of WPC as a mediator in the relationship between caregiving situation and burnout risk differs between medical doctors, nursing professionals and other health professionals. The stratified analyses for medical doctors revealed no significant difference in burnout risk between the caregiving groups. TDCs working as other health professionals and nursing professionals showed a significantly higher burnout risk compared to formal caregivers only. WPC mediated this relationship in other health professionals, as all mandatory conditions for mediation were fulfilled. Hence stress resulting from the inter-role conflict between work and private life explained the higher burnout risk of TDCs among other health professionals. On the contrary, WPC did not mediate the same relationship in nursing professionals because TDCs working as nurses do not have a higher WPC score compared to formal caregivers only. Hence, WPC failed to explain the effect of the caregiving situation on burnout risk among nurses. Our findings were not in line with a previous study finding stronger associations between WPC and burnout in nurses, technical care and emergency staff, whereas work-related stressors are more strongly associated with burnout in medical doctors, therapists and medical-technical staff [6]. In contrast to this study, we found that WPC was more strongly associated with burnout in medical doctors than in nursing professionals.

Strengths and limitations

To our knowledge this is the first study to assess the influence of the combination of formal and informal caregiving roles on burnout risk for different professional groups in the healthcare setting. Also, we considered WPC as a mediator in the relationship between caregiving situation and burnout risk. This study is innovative because it investigates an emerging topic in a study population with an elevated burnout risk.

There were several limitations of this study. Although we considered the caregiving situation as well as the stressor WPC as predictors for burnout risk, our data is cross-sectional and hence does not allow causal inferences. Despite the bidirectional concept of inter-role conflicts between work and private life, WPC only measures the conflict between work and private life. Further, the response rate of 41% may have resulted in selection bias. Due to the small number of participants in some caregiving groups, the confidence intervals were large. Moreover, the low number of some professional groups required the merging of some categories, despite different working conditions. Further, our categorisation of the caregiving situation was based on roles and not controlled for intensity or duration. As the questions to categorise our study population into caregiving groups stemmed from the national module on unpaid work from the Swiss Labour Force Survey, the double- and triple-duty caregiving measure does not fully correspond to other measures used for DDCCs, DDACs and TDCs in international studies. This reduces the comparability with previous studies in this field.

Conclusions

Considering the high burnout rate among health professionals and informal caregivers and the evidence of its adverse effects on hospitals' performance, quality of care, patient safety, satisfaction and turnover rate [9, 24], these results have major implications not only for healthcare professionals' wellbeing but also for patients and society at large. Larger-scale studies focusing on the combination of informal caregiving roles among health professionals are required to better understand these mechanisms. Moreover, a commonly agreed, valid and reliable measure of informal caregiving is crucial to increase the comparability of studies.

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Competing interests
We declare no conflict of interest as the funding sources were not involved in conceiving this study, analysing data, interpreting results or drafting of the manuscript.

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Appendix 1

Questionnaire

The questionnaire is available as a separate file for downloading at https://smw.ch/en/article/doi/smw.2017.14552/