A harmful care? The association of informal caregiver burnout with depression, subjective health, and violence

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Funding: Pierre Gérain was funded by the National Funds for Scientific Research in Belgium with a grant from the Funds for Social Sciences Research. He is now at Scalab, UMR 9193, University of Lille, Lille, France.

Cite as: Gérain, P., & Zech, E. (2020). A harmful care? The association of informal caregiver burnout with depression, subjective health, and violence. *Journal of Interpersonal Violence.* Advance online publication. *doi:* 10.1177/0886260520983259

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Abstract: Providing informal care to a relative can lead sometimes to informal caregiver burnout, which is expected to lead to deleterious consequences. Among these consequences, lie the risk of perpetrating violent behaviors against the care-recipient, the caregivers' risk of depression and their low subjective health. To investigate these associations, a sample of 499 informal caregivers completed a questionnaire addressing informal caregiver burnout, depression, subjective health, and violence. Hierarchical regression models were used to investigate the potential association of burnout with these potential consequences, while controlling for sociodemographic variables and received violence. The results show that burnout, and especially emotional exhaustion, is significantly associated with depression, low subjective health, and perpetrated physical violence, but not with perpetrated psychological violence. For both psychological and physical violence, it appears that receiving violence is the best predictor of perpetrating violence. With these results, this cross-sectional study confirms the association of informal caregiver burnout with deleterious consequences – even if this observation must be pondered – and the central role of received violence in predicting perpetrated violence, suggesting the risk of violence escalation. The implications of these results suggest that the emotional state of informal caregivers is one of the indicators of potential deleterious consequences and should, as such, be considered as a warning signal by field workers.

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Informal caregivers are individuals providing care and assistance to a relative who is in need due to a disease, a disability, or any health issue causing a loss of autonomy (Schulz & Tompkins, 2010). Providing such assistance helps maintain the care-recipient's at home longer, and is often beneficial for the caregiver in terms of relational closeness, personal accomplishment, or personal growth (Marino et al., 2017). But because it can be highly demanding, it might also lead to deleterious consequences, for both the caregiver and the care-recipient, impairing their physical, mental, and social health, or even lead to violence (Boye & Yan, 2016; Chiao et al., 2015; Pinquart & Sörensen, 2003).

These negative consequences of informal care have long been investigated, but research regarding mechanisms by which they occur remain scarce. Yet, recent studies investigating informal caregiver burnout show that it could be a key variable in understanding how informal care might take a negative turn (Galiatsatos et al., 2017; Gérain & Zech, 2019). Informal caregiver burnout has been defined as a tridimensional syndrome in response to the perceived stress that the caregiving context may represent. The first dimension of informal caregiver burnout is the emotional exhaustion, the feeling of being "at the end of the rope". It reflects the decrease of the caregivers' resources, and the feeling of no longer being able to assume this role. The second is depersonalization, which describes the detached response to the care-recipient. This dimension echoes the works pointing that caregivers might change the way they treat and consider their care-recipient, with more distance (Cross, Garip, & Sheffield, 2018). The third is the personal accomplishment, which is the positive dimension of the caregiving experience. It covers the feeling of self-fulfillment and meaning found through the caregiving role. As informal caregiver burnout is the result of a chronic imbalance between demands and resources that puts the individual under stress, it is expected to be associated and leading to

deleterious consequences at the individual and interpersonal levels (Galiatsatos et al., 2017; Gérain & Zech, 2019).

At the interpersonal level, the investigation of the three dimensions of informal caregiver burnout provides promising keys to understand harmful attitudes and behaviors informal caregivers may have, which includes psychological and physical violent behaviors[1] (Yan, 2014). Even though violence is and often remains a taboo in informal care (Shankardass, 2020), the risk of psychological and physical violence towards the care-recipient remains real in the caregiving context. Psychological violence can be defined as the "infliction of anguish, pain, or distress through verbal or non-verbal acts" and physical violence covers the "infliction of physical pain, injury, or physical coercion, and involving at least one act of violence […]" (Ananias & Strydom, 2014, p. 270). Evidence originating from the elderly informal care context shows that the occurrence of violence is annually ranging from 4% to 36%, depending on the type of violence and ways to measure it (Acierno et al., 2010; Lafferty, Fealy, Downes, & Drennan, 2016). When looking at the risk for children, it appears that children with disabilities are three to four times more likely to be victim of physical violence than children without disabilities (Crowley, 2016). This means that at least 10% of children with disabilities are regularly at risk of being the victim of any form of physical violence, mostly by family members, and the prevalence of psychological violence is expected to be even higher. Regarding the violence toward young and middle-age adults, examples of research in mental health populations have shown rates of 14 to 28% of physical violence from an intimate partner (McPherson et al., 2007). If these examples are only glimpses of the real numbers, they all point-out that care-recipients are at risk of experiencing violent behaviors from their caregiver. Caregiving stress, mainly evaluated through the concept of subjective burden, has been found

[1] The term violence rather than abuse was preferred because the term abuse implies chronic dominance, whereas the goal of the study is to understand how any form of violence may occur, even if it does not come with dominance.

to be one of the caregiver-related risk factors of violence (Boye & Yan, 2016; Johannesen & LoGiudice, 2013). Yet, little research has been performed on the association between informal caregiver burnout and violence in this context. One study conducted among informal caregivers of elderly with dementia highlighted an association between informal caregiver burnout (mainly emotional exhaustion and depersonalization) and verbal and physical violence by the caregiver toward the care-recipient (Yan, 2014). This is in line with research conducted in professional and parental settings, showing that burnout is a significant risk factor of violence (Borteyrou & Paillard, 2014; Mikolajczak, Brianda, Avalosse, & Roskam, 2018). Yet, with only one study conducted among informal caregivers of elderly adults, evidence is lacking on how informal caregiver burnout, and especially each of its dimension, could affect the risk of violence when providing informal care.

At the individual level, informal caregiver burnout has been shown to be related to the caregiver's depression (e.g., Truzzi et al., 2008, 2012). The more informal caregivers report burnout, the more they are at risk of depression. Previous theoretical and empirical works have highlighted that informal caregiver burnout is a mediator in the association between positive and negative caregiving appraisal (how caregivers perceive their role) and depression (Gérain & Zech, 2019; Lee & Singh, 2010). But the evidence remains unclear regarding how the three dimensions of burnout affect depression. To date, emotional exhaustion appears to be the most investigated dimensions in association to depression, and appears highly correlated to it (Bachner, 2016; Katsifaraki & Wood, 2014; Sugihara, Sugisawa, Nakatani, & Hougham, 2004). But more research must be conducted regarding the role of the other dimensions, especially personal accomplishment. Existing studies have found inconclusive associations between personal accomplishment and depression (Katsifaraki & Wood, 2014; Truzzi et al., 2012; Yılmaz, Turan, & Gundogar, 2009). It might represent a protective factor on the long run as it reflects the positive side of caregiving, which could counterbalance other risk factors.

In addition to mental health consequences, informal caregivers often report lower physical health than non-caregivers, in terms of lower subjective health, higher reporting of diverse physical symptoms, and higher consumption of medications (Bom, Bakx, Schut, & van Doorslaer, 2018; Pinquart & Sörensen, 2003). However, mechanisms by which caregivers' physical health is reduced remain unclear (Robaye, Mormont, Lassaux, Janne, & Gourdin, 2018). In the line with works suggesting that stress processes could be some of the mechanisms by which informal caregiving influences physical health, previous research has found an association between informal caregiver burnout and subjective physical health (Choi & Sok, 2012; Goetzmann et al., 2012). Other works have shown that informal caregiver burnout could also be a mediator between informal caregiving and subjective physical health (Lee & Singh, 2010). Such association is expected to occur mainly through emotional exhaustion and not with the two other dimensions, as the emotional exhaustion is intertwined with physical exhaustion and reflects a poorer well-being, while the two others are mostly relational (depersonalization) and cognitive (personal accomplishment). However, some studies have found a negative association with personal accomplishment, in addition to emotional exhaustion (Weiss, 2002), while others did not find such association (Valente et al., 2011). Because there is no clear reason why such association should be found, there is a need for additional information regarding this potential association with higher statistical power.

Purpose of the Study

This study aims at investigating the role of informal caregiver burnout in the understanding of how potential deleterious consequences of informal care may occur. This approach is supported by theoretical work suggesting that informal caregiver burnout can lead to such consequences (Galiatsatos et al., 2017; Gérain & Zech, 2019). In this present work, two sets of potential consequences are investigated. The first set focuses on the interpersonal behaviors and covers the risks of violence toward the care-recipient, an increase in burnout

potentially increasing the occurrence of violence. The second set of consequences focuses on caregivers themselves and covers the caregiver depression and subjective health. Higher burnout levels are expected to increase depression levels and lower subjective health.

Method

Sample

An online survey was created on the Qualtrics® survey platform. It was then sent to different informal caregiving associations, websites, forums, and social media for dissemination. The only inclusion criterion was to currently provide informal care to someone they know. A total of 505 people completed the questionnaire from November 2017 to August 2018. Six of them were removed from the sample as they were identified as no longer being caregivers or being professional caregivers. The final sample was constituted of 499 informal caregivers. The sample is described in Table 1.

Insert Table 1

Measures

Informal caregiver burnout was measured with an adaptation to informal caregiving of the Maslach Burnout Inventory – Human Services Survey (MBI-HSS, in Maslach, Jackson, & Leiter, 1996). This scale investigates burnout in 22 items with 7-levels Likert scales from 0 (*Never*) to 6 (*Every day*). The 22 items are distributed in three dimensions: emotional exhaustion (EE, e.g., "*I feel emotionally drained from providing care to my relative*"), depersonalization (DP, e.g., "*I don't really care what happens to my relative*") and personal accomplishment (PA, e.g., "*I have accomplished many worthwhile things in providing care to my relative*"). A higher score in emotional exhaustion and in depersonalization, along with a lower score in personal accomplishment reflects higher informal caregiver burnout. In the present study, the internal consistency was good to excellent for each subscale (EE $\alpha = .94$, DP $\alpha = .70$, PA $\alpha = .81$).

Violence was measured through an adapted version of the Conflict Tactic Scale version 2 short form (CTS2sf, Straus & Douglas, 2004), which is based on the full-length CTS2 (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The scale investigates the violence perpetrated against and received from the partner in two joint sets of items. In the present study, the items were rephrased to be adapted to the caregiver – care-recipient relationship, as it has been done in several other studies (e.g., Beach et al., 2005; Fenton et al., 2013; Rivera-Navarro et al., 2018). Only the 2x2 items regarding psychological aggression (e.g., "*I insulted or swore or shouted or yelled at my care-recipient*") and the 2x2 items regarding physical assault (e.g., "*I pushed, shoved, or slapped my care-recipient*") were used. Respondents were requested to state if they perpetrated or received each form of violence (e.g., "*I/my care-recipient pushed, shoved, or slapped my care-recipient/me*") on a non-linear Likert scale from 0 to 7, where 0 is "*It never happened*", 1 is "*It happened before but not anymore*", and 2 to 7 are frequencies, from 2 "*Once in the last year*" to 7 "*More than 20 times in the last year*". Participants were coded as perpetrating (or receiving) violent behaviors when they reported that they had been violent (or subject of violence) at least once in the past year. This coding was made both for psychological and physical violence.

Subjective health was measured through the Global Health subscale of the Short Form 36 Health Survey (SF-36, Jenkinson, Coulter, & Wright, 1993; Leplège, Ecosse, Verdier, & Perneger, 1998). Respondents had to rate their perceived health on a first question regarding their global health (1 = *Excellent*, 5 = *Bad*), and four additional statements such as "*My health is excellent*" (1 = *Totally true*, 5 = *Totally False*). In the present study, the coding was made so that higher score represents better perceived health. The scale had good internal consistency ($\alpha = .84$).

Depression was measured through the French version of the short form of the Beck Depression Inventory (BDI-13, Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Collet &

Cottraux, 1986). The 13-item scales measure depression, based on four different statements for each item (e.g., (0) "*I do not feel sad*" to (3) "*I am so sad that I can't stand it*"). For each item, respondents had to choose the statement better describing their current state. The scale had good internal consistency in the present study (α = .88).

Statistical Analyses

Statistical analyses were performed with the IBM SPSS Statistics software version 25. For bivariate associations, Pearson correlation coefficients were used for continuous variables, chi-squared tests were used for categorical variables, and ANOVA were used to compare continuous variables based on categorical ones. To investigate the predictive role of the three burnout dimensions together on continuous variables (depression and subjective health), linear regression models were used. For the investigation of the predictive role of the three burnout dimensions together on categorical variables, logistic regression models were used.

Results

Descriptive statistics

Means and standard deviations of the investigated variables are displayed in Table 2.

Up to 221 participants (44.3%) reported perpetrating psychological violence against the care-recipient and 49 (9.8%) reported having been physically violent with their care-recipient during the last year (see Table 3). In the latter group, only two individuals reported having been physically violent without having been psychologically violent with their care-recipient, but the vast majority (n = 47, 9.4%) reported having been both physically and psychologically violent.

Insert Table 2 and 3

Bivariate associations

Bivariate associations are reported in Table 2. The three dimensions of burnout appear to be related to every investigated outcome, with the exception of perpetrated physical violence that was associated only with emotional exhaustion and not depersonalization nor personal

accomplishment. Received physical violence was also related to emotional exhaustion and depersonalization, but not with personal accomplishment.

Table 4 displays the interplay between perpetrated and received forms of violence. Regarding received violence, 256 (51.3%) caregivers reported having received psychological violence, and 87 (17.4%) physical violence. Again, most of those receiving physical violence also received psychological violence (n = 83, 16.6%). The rates of received violence are approximatively 7% higher than those of perpetrated violence (respectively 51.3% vs 44.3% for physical and 17.4% vs 9.8% for physical violence). Bivariate analyses highlighted that, for both psychological and physical violence, perpetrated and received violence were significantly associated (for psychological violence, χ^2 (1, N = 499) = 131.59, $p < .001$ and for physical violence, χ^2 (1, N = 499) = 94.03, $p < .001$). These associations reflect that when there is received violence, there is more perpetrated violence. For instance, informal caregivers receiving psychological violence are more prone to perpetrate themselves psychological violence (69.1% of the caregivers receiving psychological violence perpetrate psychological violence versus 30.9% not perpetrating such violence).

Insert Table 4

Regression Models

For the present analyses, three-steps regression models were used. The objective was to identify the predictive role of informal caregiver burnout on deleterious outcomes (step 1) and then to investigate if this effect was maintained when adding sociodemographic variables (step 2), and received psychological and physical violence (step 3).

The impact of burnout on perpetrated violence was investigated with logistic regressions. The previous χ^2 analyses highlighted an overlap of physical and psychological violence (i.e., a vast majority of physically violence caregivers also reported psychological violence, with only two physically violent caregivers not reporting psychological violence). The regression

analyses on perpetrated violence were therefore performed in three complementary ways. The first regression looked at the predictors of the occurrence of any form of violence, regardless of its kind in the entire sample (*n* violent caregivers = 223 on a total of *N* = 499). The second regression investigated the predictors of the occurrence of psychological violence *only*, therefore excluding caregivers perpetrating physical violence (*n* only psychologically violent caregivers = 174 on a total of *N* = 450). The third regression investigated the predictors of the occurrence of physical violence, therefore excluding the caregivers perpetrating only psychological violence (*n* only physically violent = 49 on a total of *N* = 325).

The first regression on the occurrence of violence is displayed in Table 5. The inclusion of the three dimensions of burnout (Step 1) contributes to predict the occurrence of violence (χ^2 (3, N = 499) = 36.01, $p < .001$), where emotional exhaustion and depersonalization appear as risk factors for violence (respectively, OR = 1.23, p = .001 for EE and OR = 1.23, p = .013 for DP). The inclusion of sociodemographic variables (Step 2) added a significant amount of explained variability (χ^2 (4, N = 499) = 15.01, p = .005), the caregiver's and care-recipient's older age appearing as protective factors (OR = 0.99, p = .045 and OR = 0.99, p = .018), while maintaining the role of emotional exhaustion and depersonalization. The inclusion of received violence (Step 3) also added a significant explained variance (χ^2(2, N = 499) = 106.06, $p <$ .001). Received psychological and physical violence were significant risk factors for perpetrating violence (OR = 6.97, $p < .001$ and OR = 1.88, p = .043), overshadowing the role of emotional exhaustion and depersonalization, which became nonsignificant (OR = 1.16, p = .051 and OR = 1.14, p = .159). Emotional exhaustion and depersonalization were therefore significant predictors of the occurrence of violence until the inclusion of received violence.

The second regression focused on perpetrating only psychological violence (Table 5). Overall, the same pattern as for the first logistic regression appears. The inclusion of the burnout dimensions in Step 1 significantly predicts the occurrence of psychological violence (χ^2 (3, N =

450) = 27.63, $p < .001$), with emotional exhaustion and depersonalization as risk factors (OR = 1.16, $p = .031$ and $OR = 1.26$, $p = .009$). This effect was maintained until the significant addition of Step 3 (χ^2 (2, $N = 450$) = 89.58, $p < .001$), where received psychological violence appeared as a significant risk factor of perpetrated psychological violence (OR = 8.10, $p < .001$), overshadowing the role of emotional exhaustion and depersonalization (OR = 1.10, $p = .210$ and $OR = 1.16$, $p = .130$).

The third regression focused on the occurrence of perpetrated physical violence (Table 5). Informal caregiver burnout (Step 1) significantly contributed to explaining perpetrated physical violence (χ^2 (3, $N = 325$) = 24.55, $p < .001$) but only through emotional exhaustion (OR = 1.54, $p < .001$). The inclusion of sociodemographic variables (Step 2) significantly increased the explained variance (χ^2 (4, $N = 325$) = 16.61, $p = .002$), the care-recipient's age being a protective factor against physical violence (OR = 0.98, $p = .003$). The inclusion of received violence (Step 3) significantly increased the explained variance (χ^2 (2, $N = 325$) = 67.40, $p < .001$). Informal caregivers receiving physical violence were almost 17 times more likely to perpetrate physical violence themselves (OR = 16.74, $p < .001$). Receiving psychological violence was not associated with an increased risk of perpetrating physical violence ($OR = 2.39$, $p = .108$). Contrary to the analyses on global and psychological violence, emotional exhaustion remained a significant risk factor of physical violence (OR = 1.57, p = .003) when controlling for received violence.

Insert Table 5

The following regression then investigated the impact of informal caregiver burnout on depression (in Table 6). Step 1 highlighted that the three dimensions of informal caregiver burnout were significantly associated with depression ($F(3, 495) = 119.94$, $p < .001$, $R^2 = .42$). Emotional exhaustion and depersonalization were significant risk factors (respectively, $\beta = .53$, $p < .001$, $\beta = .09$, $p = .034$), and personal accomplishment was a protective factor ($\beta = -.19$, $p <$

.001). The addition of sociodemographic variables (Step 2) led to a small but significant increase of explained variance ($\Delta R^2 = .02$, $F(4, 491) = 3.77$, $p = .005$), older caregivers being less prone to depression ($\beta = -.12$, $p = .001$). The inclusion of received violence (Step 3) did not lead to additional explained variance ($\Delta R^2 = .00$, $F(2, 489) = 0.14$, $p = .871$). The three burnout dimensions remained significant predictors of depression, even when including sociodemographic, and received violence variables.

Insert table 6

The second regression focused on subjective health (Table 6). The inclusion of the three burnout dimensions (Step 1) was a significant predictor of subjective health ($F(3,495) = 26.88$, $p < .001$, $R^2 = .14$), with emotional exhaustion being the only significant risk factor of low subjective health ($\beta = .36$, $p < .001$). The addition of sociodemographic (Step 2) and received violence (Step 3) did not modify the relationship with emotional exhaustion nor led to additional explained variance (respectively, $\Delta R^2 = .01$, $F(4, 491) = 1.27$, $p = .281$ for Step 2, and $\Delta R^2 = .00$, $F(2, 489) = 1.17$, $p = .310$ for Step 3). Of all the included variables, emotional exhaustion was therefore the sole predictor of subjective health. The higher was the emotional exhaustion, the lower was the subjective health.

Discussion

The present study aimed at investigating the association between informal caregiver burnout and potential deleterious consequences of informal care. To do so, a sample of 499 informal caregivers answered an online questionnaire investigating informal caregiver burnout, depression, subjective health, and violence in the caregiving context. Five different regression analyses were performed in order to have a closer look at the association informal caregiver burnout has with these deleterious outcomes, while controlling for sociodemographic variables, and received violence. Therefore, and to answer to the main question of the present study, informal caregiver burnout appears to be associated with deleterious consequences, but with a

few nuances. Emotional exhaustion appears as a risk factor for every investigated outcome, with the exception of psychological violence when controlling for received violence. An increased emotional exhaustion therefore appears to be associated with depression, low subjective health, and a risk of perpetrating physical violence. Depersonalization and personal accomplishment share a common pattern: they were associated with depression but did not appear as significantly explaining additional variance of subjective health or violence when controlling for the aforementioned variables.

Informal caregiver burnout was associated with violence in the caregiving context, but only to some extent. For perpetrated physical violence, emotional exhaustion remained a risk factor, even when controlling for received violence. In regard of the important effect size of received violence, it suggests a moderate but strong effect of emotional exhaustion on physical violence. As suggested by previous studies, emotions, and particularly anger regulation, could play a key role in violence (MacNeil et al., 2010). Emotional exhaustion could facilitate the onset of anger due to more important irritability (Maslach & Leiter, 2016), and therefore lead to unwanted violent behaviors. Research on professional burnout has shown that high levels of emotional exhaustion lead to lower cognitive inhibition abilities (Deligkaris, Panagopoulou, Montgomery, & Masoura, 2014). Emotional exhaustion could therefore lead to lower self-control that would otherwise have diminished the risk of having violent behaviors caused by anger or irritability.

For perpetrated psychological violence, the effect of informal caregiver burnout became non-significant when controlling for received violence. This is in line with the result of the only study on the impact of informal caregiver burnout on violence (in the context of dementia, Yan, 2014). In this study, the authors found a significant bivariate association between burnout and violence, but this association became non-significant when controlling for the care-recipient agitated behaviors, which covers various dementia-related behaviors, including violence. In the

present study, the focus was not only on caregivers of individuals with dementia, but also of people with a large set of other health issues. And yet, it still led to the same pattern of results. This absence of association can be read in light of the high occurrence of psychological violence. Because an important proportion of informal caregivers reported having psychological violent behaviors, this violence might be so common that informal caregiver burnout has little impact on it. As it was highlighted in previous works, psychological violence is relatively frequent in the context of informal care, with rates ranging up to 60% (44% in the present study) (Boye & Yan, 2016; Lafferty et al., 2016). Psychological violence may therefore be caused, not by a particular and extreme emotional state, but rather through a combination of individual and contextual factors slowly leading to a banalization of psychological violence (Ananias & Strydom, 2014).

When taking aside the role of informal caregiver burnout, it appears that received violence is the best predictor of perpetrated violence. In other words, violence seems to breed violence. The present cross-sectional study does not allow to draw temporal causality, but still highlights that received and perpetrated violence seem intertwined. This is particularly important as, in some cases, violence is not voluntary. In several contexts of caregiving, it is more than likely that the care-recipient is violent due to involuntary violent behaviors (e.g., Sampson et al., 2015) or uncontrolled aggressiveness (e.g., Hounsome, Whittington, Brown, Greenhill, & McGuire, 2018), which can be associated with their disease or health issue. The escalation of violence may therefore be triggered by the condition of the care-recipient, opening the spiral of violence. But the assumption that care-recipient's violence precedes the caregivers' remains theoretical. The sequence suggested in the present paper (recipient violence – burnout – caregiver violence) is more complex in daily life, as the cycle of violence is often incremental and builds up over time (Crowley, 2016). A starting point or clear cause are therefore difficult to identify. We can

only but stress the necessity to conduct event-based studies and qualitative interviews to explore what triggers violence in the daily lives of caregivers.

The analyses highlighted that burnout in its three dimensions was a significant predictor of depression. This is in line with previous studies showing the close ties between burnout and depression in informal caregiving contexts (Bachner, 2016; Katsifaraki & Wood, 2014; Sugihara et al., 2004). If the significant association between emotional exhaustion and depression was quite homogeneous in the literature, the same did not hold for personal accomplishment. This association is found inconsistently in the literature, with studies showing no association (D'Aloisio, 1996; Truzzi et al., 2008, 2012; Yılmaz et al., 2009) or, on the contrary, moderate to high ones (Katsifaraki & Wood, 2014; Weiss, 2002). The present results suggest that personal accomplishment may have a protective role to play. The combination of exhaustion with accomplishment in the caregiving role may therefore be a more balanced risk profile. Since the two are intercorrelated but remain distinct (Gérain & Zech, 2019), there is a possibility that they might co-occur. Studies on professional burnout suggest that different profiles of burnout might exist (Leiter & Maslach, 2016). Some exhausted caregivers might therefore be more at risk of depression than others who are at the same time exhausted and accomplished. A balanced burnout profile with high exhaustion and high accomplishment may be less at risk on the long run, even if low emotional exhaustion appears to be the best predictor of low depression.

For subjective health, only emotional exhaustion appeared as a risk factor. This result meets our hypothesis, as emotional exhaustion was the sole dimension of informal caregiver burnout expected to be related to subjective health. This expectation is due to the fact that emotional exhaustion is closely tied to physical fatigue and has been shown to be related to adverse physical outcomes (Choi & Sok, 2012; Goetzmann et al., 2012). The general scale assessing subjective health used in the present study has been shown to be a good proxy of the

physical state individuals face (McDowell, 2006). But it calls for further research on whether this subjective feeling may truly reflect a future health problem and by which mechanisms. Such mechanisms are currently investigated in terms of biomarkers, both in the burnout and the informal care literature (Allen et al., 2017; Danhof-Pont, van Veen, & Zitman, 2011). A complementary investigation would examine how informal caregiver burnout (and particularly emotional exhaustion) may cause a modification of the health behaviors (substance consumption, physician appointment, diet, and physical exercise) (Hoffman, Lee, & Mendez-Luck, 2012; Sisk, 2000). The potential worsening of physical health would therefore be through psychoneuroimmunology processes, but also through harmful behaviors.

One of the objectives was also to disentangle the role of each of the burnout dimensions on deleterious consequences. It appears that emotional exhaustion and personal accomplishment play an expected role, where depersonalization did not. Depersonalization was hypothesized to play a particular role in perpetrating violence, but it was neither significant (for physical violence), nor acted in addition to emotional exhaustion (for psychological violence). These results are quite surprising regarding the relevance of depersonalization in the informal caregiving context. Several hypotheses could be drawn from the absence of this effect, but one stands out particularly clearly. This hypothesis relates to the idea that depersonalization might not make sense for informal caregivers or may be too skewed. Indeed – and even if it had no impact on the assumptions for the regression models used in the present study – participants seem to rarely endorse the items. This concept might therefore be too extreme to be meaningful for the participants and therefore for research in this field. This observation echoes the concept of emotional distancing in Parental Burnout, which replaced depersonalization and would probably allow a more nuanced understanding of the continuum of relational attitudes (Roskam, Raes, & Mikolajczak, 2017). In emotional distancing, the items are less extreme (e.g., considering the recipient in automatic mode instead of considering him or her as an object) and

may reflect a more nuanced continuum of feelings toward one's children. Applied to the context of informal care, such distancing might be more like a technical, healthcare professional, attitude toward the care-recipient. The caregiver acts not like a relative but more like a professional, with some distance. One way to test this hypothesis is to use a mixed-method validation of the MBI to the informal care context to investigate the conceptual validity of the concept (does it make sense) and its statistical validity (how do the existing items work together). Qualitative interviews could also look at experiential ways of being with the care-recipient to explore this complex interaction and better understand what is at stake.

Lastly, this study included all kinds of informal caregivers, regardless of the diagnostic or kinship with the care-recipient. If it brings interesting insights for all informal caregivers, the results may not convey the same message for all of them. Providing care to a parent or a child is fundamentally a distinct experience in many ways, which may include, in some cultures and socio-economical contexts, the unusual aspect of providing care to a parent as opposed to the normality to provide care to a child (Pinquart & Sörensen, 2011). In the present study, the initial goal was to take these relationships into account in the analyses, but it yielded little significant results and contributed to overly demanding and complex models. Additionally, as other works have shown, there is no clear pattern of differences when looking at the challenges and uplifts of informal caregivers based on their kinship (Pinquart & Sörensen, 2011). When there are differences between groups based on their kinship, they can often be boiled down to descriptive elements such as co-residence, number of hours and tasks of care, as well as issues related to the care-recipient's diagnostic and behavior. For the present study, there is no clear theoretical pattern that can be drawn in which kinship influences how informal caregiver burnout is associated with violence, depression and subjective health. Far from stating that they all have the same risk profile, we rather suggest that informal caregiver burnout plays a role in such

443 deleterious consequences, but that this role is only one among others, including complex
444 relational dynamics.

445 **Limitations**

446 The present study was cross-sectional, and its results would benefit from being
447 investigated longitudinally. One of the aspects that could bring new insights in the literature
448 would be to investigate if the association between informal caregiver burnout and its deleterious
449 consequences fluctuates over the course of caregiving. Therefore, beyond clarifying the
450 causality, such investigation would bring a better understanding about if and how it changes
451 over time.

452 The measurement and analysis of violence may also be challenged. In the present study,
453 we preferred to use binomial "presence/absence over the last year" coding and logistic
454 regressions, based on previous studies (e.g., Beach et al., 2005; Fenton et al., 2013). This may
455 have led to lose information about the distribution of violence, as it did not take into account
456 their respective frequency. This loss nevertheless allowed us to show clearer and more readable
457 risk associations and to create composite groups based on the different items of physical and
458 psychological violence. In addition to that, an important proportion of caregivers categorized
459 here as non-violent reported having had such behavior "in the past, but not anymore". Even if
460 we do not have any indicator of the authenticity of this statement, it may be possible that some
461 of them were actually violent and preferred to state that it had stopped. Overall, measuring
462 violence remains a difficult task (Pisani & Walsh, 2012). A dyadic perspective on violence
463 could be a better proxy to have a proper assessment of what is currently happening, but it is not
464 always possible since some care-recipient cannot always be interviewed due to their age or
465 condition. It also questions the caregiver's (and care recipient's) perception of the nature of
466 violent behavior. Even if the questions asked here tried to be objective, the threshold at which
467 violence starts is different for every caregiver and may depend on their norms (Stones &

Bédard, 2002), and this consideration will be even stronger if we consider neglect, which is already less clear from the start. Therefore, the challenge remains to be able to make an adequate assessment of violence that is relevant and free of social desirability.

Regarding diversity, it appears that our sample was mainly constituted of women with upper socio-economic backgrounds. If the larger presence of women reflects the caregiving landscape, the present study nevertheless may not have enough men to reflect how they could act differently in such contexts and how gender issues may intervene in this context. Future studies should therefore take more into account these issues to ensure a better understanding of the possible gendered differences. Regarding the socio-economic background, it appears that our sample was mainly from middle-upper class in Western countries. The financial pressure is also different for other socio-economic groups and could increase the financial, health, and social difficulties they face. Our result would benefit from comparable investigations in other countries with different cultural backgrounds and lower Human Development Index, as well as with sample constituted of low to middle class informal caregivers.

Implications

These results provide key implications for field workers. The association between burnout and deleterious consequences call for a particular attention to the personal challenges informal caregivers face. As it is the case in other contexts (e.g., parental and professional), burnout can be a first step in the direction of mental health problems. The associations between burnout and depression show that even though informal caregiver burnout is not *per se* recognized as a disorder by international categorizations, it is an important indicator of the risk of depression. As such, field workers identifying informal caregiver burnout – emotional exhaustion, in particular – should acknowledge it for what it is: a warning signal of a potentially problematic situation. This concern should be especially relevant as our results also showed an association between burnout and violent behaviors toward the care-recipient. Here, the focus was on psychological and physical violence, but the probability that informal caregiver burnout is

associated with other problematic behaviors that have yet to be explored (e.g., neglect) is real. The need is therefore to target the sources of informal caregiver burnout and try to alleviate the burden on the caregiver's shoulders (e.g., by increasing their psychological resources or giving them the opportunity to access to formal support services). Front-line field workers in the daily life (e.g., home-aid, nurses) can therefore take the role of sentinels and identify the rise of informal caregiver burnout or violence, but they must have someone to refer to, who can provide help if necessary (e.g., social workers and psychologists). These helpers must be prepared and feel capable of receiving such distress, with adequate tools and training.

Conclusion

Overall, these results suggest that emotional exhaustion is a key caregiver-centered variable when considering possible deleterious consequences of informal caregiving. Of the three burnout dimensions, it remains the most stable predictor for the majority of the investigated consequences, even when controlling for other relevant variables. This finding supports the investigation of informal caregiver burnout, but also calls for a redesign of the depersonalization dimension to better fit with the caregiver's experience.

When looking at violence, it appeared that the occurrence rates were high, and particularly for psychological violence. This important rate interrogates the potential banalization of psychological violence in the caregiving context, and calls for further investigation. If the boundary is clearer for physical violence, where is the limit where a harsh conversation stops and true psychological violence begins? Future research should also focus on more subtle forms of violence, such as neglect, whether intentional or not (e.g., not bathing the care-recipient for longer than expected, skip a meal, or not responding to a request for assistance).

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673

Tables

Table 1. Description of the sample.

	Mean (SD)	N (%)
Age	53.08 (13.33)	
Women		438 (87.8)
Nationality		
Belgian		233 (46.7)
French		249 (49.9)
Other		17 (3.4)
Education		
Primary		7 (1.4)
Secondary		128 (25.6)
Superior		294 (58.9)
Third Cycle		70 (14.0)
Occupation status		
Full-time		136 (27.3)
Part-time		95 (19.0)
Retired		141 (28.3)
Jobless		57 (11.4)
Other		70 (14.0)
Care-recipients' age	49.17 (26.10)	
Care-recipient women		210 (42.1)
Caring for a		
Spouse		114 (22.8)
Child		195 (39.1)
Parent		97 (19.4)
Other		93 (18.6)

N = 499

Table 2. Correlation matrix of investigated variables.

	MBI EE	MBI DP	MBI PA	SF36-GH	BDI-13	Perpetrated PsyV	Perpetrated PhyV	Received PsyV	Received PhyV
MBI EE	1								
MBI DP	.51***	1							
MBI PA	-.17***	-.29***	1						
SF36-GH	.37***	.21***	-.11**	1					
BDI-13	.61***	.41***	-.31***	.47***	1				
Perpetrated PsyV	.24**	.23***	-.10*	.07	.17***	1			
Perpetrated PhyV	.18***	.08	.03	.05	.15***	.34***	1		
Received PsyV	.26***	.26***	-.15***	.16***	.18***	.51***	.19***	1	
Received PhyV	.15**	.12**	.00	.09t	.09*	.30***	.43***	.41***	1
Mean	3.66	2.36	5.08	2.80	1.60	.44	.10	.51	.17
SD	1.68	1.35	1.22	.86	.47	.50	.30	.50	.38
Cronbach α	.94	.70	.81	.84	.88				

Notes: N = 499. * $p < .05$. ** $p < .01$. *** $p < .001$. MBI = Maslach Burnout Inventory. EE = Emotional Exhaustion. DP = Depersonalization. PA = Personal Accomplishment. SF36-GH = Short Form 36 items Health Survey – Global Health. BDI-13 = Beck Depression Inventory – Short Form. PsyV = Psychological violence. PhyV = Physical violence.

Table 3. Perpetrated physical and psychological violence.

		Physical violence			
		Yes	No	Total	$\chi^2(1)$
Psychological Violence	Yes	47 (21.3%)	174 (78.7%)	221 (44.3%)	58.70***
	No	2 (0.7%)	276 (99.3%)	278 (55.7%)	
Total		49 (9.8%)	450 (90.2%)	499 (100%)	

Notes: *** $p < .001$.

Table 4. Perpetrated and received forms of violence.

			Violence received by the caregiver						
			Psychological				Physical		
Perpetrated violence		Total	Yes	No	Total	$\chi^2(1)$	Yes	No	$\chi^2(1)$
Psychological	Yes	221	177 (80.1%)	44 (19.9%)	221	131.59***	67 (30.3%)	154 (69.7%)	45.73***
	No	278	79 (28.4%)	199 (71.6%)	278		20 (7.2%)	258 (92.8%)	
Physical	Yes	49	39 (79.6%)	10 (20.4%)	49	17.41***	33 (67.3%)	16 (32.7%)	94.03***
	No	450	217 (48.2%)	233 (51.8%)	450		54 (12.0%)	396 (88.0%)	
Total		499	256 (51.3%)	243 (48.7%)	499		87 (17.4%)	412 (82.6%)	

Notes: *** $p < .001$.

Table 5. Linear regression models of caregiver depression and subjective health (n = 499).

	Depression			Subjective Health		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Variable	β	β	β	β	β	β
Step 1: Burnout dimensions						
MBI EE	.53***	.54***	.55***	.36***	.37***	.34***
MBI DP	.09*	.09*	.10*	.01	.01	.00
MBI PA	-.19***	-.20***	-.20***	-.05	-.05	-.05
Step 2: Sociodemographic variables						
CG Female		.04	.04		.06	.06
CG Age		-.12***	-.12***		-.09*	-.09*
CR Female		.00	.01		.04	.04
CR Age		-.03	-.03		.02	.03
Step 3: Received violence from the care-recipient						
CR Psychological violence			-.02			.06
CR Phy violence			.00			.01
Total *F*	119.94***	54.70***	42.43***	26.88***	12.27***	9.81***
F change	119.94***	3.77**	0.18	26.88***	1.27	1.17
ΔR^2	.42	.02	.00	.14	.01	.00

Notes: * $p < .05$. ** $p < .01$. *** $p < .001$. MBI = Maslach Burnout Inventory. EE = Emotional Exhaustion. DP = Depersonalization. PA = Personal Accomplishment. CG = Caregiver. CR = Care-recipient.

Table 6. Logistic regressions of prediction of the perpetrated psychological and physical violence toward the care-recipient.

	Violence[a] (n =499)			Only psychological[b] (n = 450)			Only physical[c] (n = 325)		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Variable	OR	OR	OR	OR	OR	OR	OR	OR	OR
Step 1: Burnout dimensions									
MBI EE	1.23***	1.24***	1.16*	1.16*	1.18*	1.10	1.54***	1.53***	1.57**
MBI DP	1.23*	1.27**	1.14	1.26**	1.28**	1.16	1.11	1.17	0.96
MBI PA	0.96	0.94	1.00	0.91	0.90	0.97	1.18	1.10	1.16
Step 2: Sociodemographic variables									
CG Female		0.97	0.87		0.93	0.80		0.87	0.92
CG Age		0.99*	0.98*		0.99†	0.98†		0.98†	0.96*
CR Female		0.78	0.96		0.67†	0.78		1.32	2.45*
CR Age		0.99*	0.99		1.00	1.00		0.98**	0.99
Step 3: Received violence from the care-recipient									
CR Psy violence			6.97**			8.09***			2.39
CR Phy violence			1.89*			1.09			16.74***
Model χ^2	36.01***	51.02***	157.08***	27.63***	37.66***	127.24***	24.55***	41.15***	108.55***
Step χ^2	36.01***	15.01**	106.06***	27.63***	10.03*	89.58***	24.55***	16.61**	67.40***
Nagelkerke R^2	.09	.13	.36	.08	.11	.33	.13	.21	.50

Note: $p < .05$. ** $p < .01$. *** $p < .001$. MBI = Maslach Burnout Inventory. EE = Emotional Exhaustion. DP = Depersonalization. PA = Personal Accomplishment. CG = Caregiver. CR = Care-recipient.

[a] Focus on all the caregivers, regardless of the type of violence (n = 499).

[b] Focus on the caregivers perpetrating only psychological violence and non-violent caregivers (n = 450).

[c] Focus on the caregivers perpetrating physical violence and non-violent caregivers (n = 325).