



Don't Forget to Take Some Time to Yourself: The Effect of Mobile Phone Reminders on Self-care Subdomains of Informal Caregivers

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ABSTRACT

The lives of informal caregivers can get so busy and overwhelmed that they stop caring for themselves. A simple daily mobile phone reminder may be enough to restore some of their self-care. In this study, we explore the effects of reminders in the lives of informal caregivers, specifically in the Mindful Self-Care subdomains. We found positive effects in the Supportive Relationships and the Mindful Relaxation subdomains with medium effects. Despite not being statistically significant, the Mindful Awareness and the Self-Compassion and Purpose subdomains have low enough p-values for us to argue that they may create positive effects if coupled with extra call-to-action features. This should be explored in future studies. The Supportive Structure subdomain seems to have no relation or be affected in any relevant way by the reminders.

CCS CONCEPTS

• **Human-centered computing** → **Mobile phones.**

KEYWORDS

informal caregivers, mobile phone, reminders, self-care

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1 INTRODUCTION

The prevalence of chronic diseases increases as our society ages, creating a greater need for support from others. Family members often provide support, although they are not compensated for this and frequently lack the necessary skills and expertise, becoming

informal caregivers [5, 12]. The high demands of this task lead to high stress, adverse health effects, increased burden, and the risk of deteriorated psychological well-being [7, 13]. The burden assesses the impact of providing care on the caregiver's health and social, personal, and financial lives [4, 19].

Balancing burden and burden-bearing capacity in informal caregivers is critical for their well-being [17]. Breaks from caregiving are recommended to recover, disconnect, and have time for self-care. Taking adequate breaks is essential for health and well-being maintenance in informal caregivers [6]. Promoting self-care may be a promising strategy for improving burden-bearing capacity.

Self-care is a process of purposeful engagement in actions that promote total self-health and welfare [9, 17]. Frequent practice preserves and improves both short- and long-term well-being holistically. Human-computer interaction (HCI) technology, mainly when patients cannot actively participate in their care, can benefit informal caregivers by assisting them in providing care for patients, according to the literature [11, 15, 18].

This assistance can be provided by relieving informal caregivers by providing auditory or visual reminders for patients [18] or by making necessary information available so the caregiver will always know when to take action [15]. Reminders have been used to help people with dementia or diabetes remember to take their medications, which has led to substantial research on the subject, particularly in medical informatics [16, 18].

It is essential to increase individual self-care by meeting these needs proactively and regularly, as high caregiving requirements often lead to a high rate of physical, mental, and social health impact [1].

Generally speaking, setting up reminders makes sense because we lose focus in our busy lives - and the lives of caregivers are hectic. Additionally, passing some of our responsibilities into technology can relieve our mental load and make it available for other duties. We must balance the advantages of remembering against the costs of being distracted, irritated, and guilty when selecting whether to plan or receive reminders. Even good reminders change the context of our attention because they put us in a different frame of mind. It could be advantageous to awaken to signals that immediately place one in a specific frame of mind. Sadly, that could also refer to guilt, stress, or feeling overburdened [3, 8].

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Research on how mobile phone reminders can enhance people's lives in very busy lifestyles, like the informal caregivers, is very scarce. Peres et al. [14] explore this issue on a broader scale and in self-care routines. We expand this study by further researching the effects of mindful self-care subdomains to increase the frequency of self-care practices.

2 METHODS

2.1 Sample

Our subjects are adult informal caregivers. There is no required workload or relationship between the caregiver and the recipient. A regular personal mobile phone with reminder capability is necessary.

We found 15 individuals that met our requirements and were willing to participate. The participants had an average age of 58 (SD = 14), with 12 (80%) females. Eleven (73%) also had a job. The average years spent providing care was six (SD = 4). Twelve (80%) participants acknowledged having less time for themselves since they started providing care due to their family members' great necessity for time and attention.

2.2 Data collection

An online questionnaire was used to gather information about the informal caregivers and the effect of the study, including demographic details and the mindful self-care test.

We gathered data about the caregiver's age, sex, time spent providing care, and if they spend less time on themselves as a result of providing care.

Our primary information source is the Mindful Self-Care Scale (MSCS) [2] which assesses the self-reported frequency of self-care behaviors.

2.3 Procedure

The informal caregivers are given an introduction to the study and asked for consent. Then, they are requested to complete the demographic and the baseline MSCS questionnaires. To set up the study, they are asked to add a mobile phone reminder for the following two weeks using a generic phrase that reads, "Do not forget to take time for yourself". The phrase is the same for every participant, but the time it shows up is chosen by themselves to fit their schedule better. At the end of the study, the caregivers were requested to fill up another MSCS test.

2.4 Data analysis

The data were analyzed using the Wilcoxon signed-rank test using SPSS Statistics 26. The six subdomains of the MSCS were used to gain a more detailed understanding of the effects of the reminders on participants.

3 RESULTS

Two of the subdomains of the MSCS had statistically significant results - *Supportive Relationships* ($p=0.048$) and *Mindful Relaxation*

($p=0.011$). The effect sizes were medium ($r = 0.51$ and 0.66 , respectively). The remaining subdomains had no statistical significance: *Physical Care* ($p=0.158$), *Mindful Awareness* ($p=0.080$), *Self-Compassion and Purpose* ($p=0.068$), and *Supportive Structure* ($p=0.586$).

4 DISCUSSION

According to our results, the daily reminders show some beneficial effects on our subjects in the context of their busy caregiving lives. Both *Supportive Relationships* and *Mindful Relaxation* show a positive medium effect. *Mindful Relaxation* is especially strong. Promising results from the *Mindful Relaxation* are to be expected since the reminder by itself and the used phrase get the mind of the participants away from their daily busy life. The *Supportive Relationships* is more of a surprise but could be explained by the participants taking that time to call or meet some friends and family.

Mindful Awareness and *Self-Compassion and Purpose* are not statistically significant but are close. We would argue that the reminders can have an effect but lack some characteristic or extra actions and motivations (for instance, a different phrase or a call-to-action like meeting a friend, going for a walk, or taking a long and relaxing hot shower).

Further away from being statistically significant is *Physical Care*. Nonetheless, by its definition, this subdomain seems like a prime candidate for an extra call-to-action.

Supportive Structure seems to have no relation or be affected in any relevant way by the reminders.

These results may be related to what the subjects did just after the reminders were triggered, their relaxation activities, and hobbies. It may also be influenced by what they did just before the reminders and their current physical and mental state. We propose that a more direct call-to-action may improve each of the effects, especially if well targeted to each subdomain. A more in-depth study would be needed to find and better understand any of those interactions.

The notifications were directly set by subjects. This could be improved using context-aware notifications and/or passive mobile sensing [10].

5 CONCLUSION

The lives of informal caregivers can get so busy and overwhelmed that they stop caring for themselves. A simple daily mobile phone reminder may be enough to restore some self-care. This paper's primary goal was to explore the effects of reminders in informal caregivers' lives using Mindful Self-Care subdomains. The results of this study show that informal caregivers using reminders for two weeks improved their self-care, specifically in two subdomains Mindful Self-Care scale: *Supportive Relationships* and *Mindful Relaxation*. The other two subdomains, *Mindful Awareness* and *Self-Compassion and Purpose*, indicate a possible result but seem to lack something to potentiate it. We propose that a targeted call-to-action may trigger the results, but more studies are necessary. We conclude that reminders positively affect informal caregivers' mindful self-care with some statistically significant results and some promising insights.

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