**Supplemental Results**

*Included Studies*

Seventy-six studies were evaluation trials, 17 were piloting and feasibility trials, and eight studies were implementation trials. Only a single developmental trial (i.e., new intervention in development) was included. All studies required critically ill patients to have an available informal caregiver. The interventions varied between trials: 58 trials used an intervention aimed to improve caregiver experience (e.g., caregiver distress or negative emotions), while 38 aimed to improve caregiver support (e.g., advice on how to respond to the patient) and six aimed to improve caregiver role (e.g., detection and prevention of delirium). Mental health interventions were generally standardized and not adapted to specific needs of the individual caregiver to support personal coping processes and preferences. All control groups from the RCTs and quasi-experimental trials consisted of usual care provided by the centers’ ICU. Classification of trials according to intervention aim is shown in Supplemental Figure 2 (http://links.lww.com/CCM/G288).

*Positive Psychological Outcomes*

Mental health interventions that showed significant improvements included a Transitional Consultation Program(37) and Newborn Individualized Developmental Care and Assessment Program(50) (courage), a Family Nurture Intervention(51) (humanity), and a Family Communication Facilitator(52), Communication Support(52-54) or Taped Neonatologist Conversations(55) (transcendence). Three studies reported significantly poorer positive psychology for courage(38) or transcendence(40, 56), of which two reported significantly poorer negative psychology(38, 40). The three-month Recovery Programme across 10 adult mixed ICUs by Bohart et al.(38) showed decreased courage at 12-months follow-up, with increased symptoms of anxiety and depression. The single-site RCT on Neonatal Bereavement Support by Rosenbaum et al.(40) assessed informal caregivers at 12-months, reporting decreased transcendence with increased depression. Baseline positive psychological outcomes before randomization were not reported from any study.

*Stratified Results*

Interventions on caregiver experience improved anxiety (n=18), but decreased courage (n=3). Caregiver role interventions improved PTSD (n=1), courage (n=1), transcendence (n=2), while caregiver support interventions improved anxiety (n=13), humanity (n=2), transcendence (n=5). Grouped by patient population, pooled RoM for informal caregivers of critically ill adult patients showed consistently significant positive effects on anxiety (n=17), distress (n=15), transcendence (n=7), but significantly negative effect on courage (n=3). Among caregivers for neonatal or pediatric populations, significant positive effects were demonstrated for anxiety (n=16) and humanity (n=3) with no consistent negative effects.

*Trials Excluded from Meta-Analysis*

Thirty-nine interventional trials were not amenable to meta-analysis due to heterogeneity of definitions or reporting. These studies were 16 quasi-experimental trials and 23 uncontrolled trials. Twenty-two were conducted in NICUs, while 14 were within adult ICUs. The single pediatric study not included in meta-analysis was performed at one PICU site evaluating the Creating Opportunities for Parent Engagement (COPE) program among thirty mothers of one- to six-year-old children (1). Supplemental Figure 3 (http://links.lww.com/CCM/G288) presents results from the 39 studies not amenable to meta-analysis grouped according to aim of intervention and significant effects. Twenty-two assessed the effect of intervention on caregiver experience, while 17 assessed caregiver support. Twenty-six studies reported on negative psychological outcomes; seventeen reported on anxiety while fifteen reported on distress and the majority reported significantly positive effects (10/17, anxiety; 11/15, distress). Results were variable among the twelve studies that reported on positive psychology; no outcome had a majority of studies reporting either significantly positive or significantly negative effects. Nine studies assessed both negative and positive psychological outcomes, with six reporting contradictory results. The uncontrolled implementation trial on music therapy in one NICU performed by Roa et al. (2) reported positive effects on anxiety, distress, and courage, but negative effects on depression and burden. The quasi-experimental trial by Chiang et al. (3) that evaluated brief cognitive behavioral therapy in a single adult mixed ICU showed no effect on courage, humanity, justice, temperance, transcendence, or wisdom and knowledge, but a positive effect on caregiver distress.

*Qualitative Studies*

Eight studies explored the nature of informal caregiving through interventional trials, and all eight focused particularly on promoting and understanding the positive aspects of caregiving. Summary of findings from qualitative studies are provided in Supplemental Table 9 (http://links.lww.com/CCM/G288). Though six studies reported primarily favorable outcomes associated with caregiver mental health interventions, (4-9) two studies concluded that more formal audit and additional research was needed (10, 11). Wong et al. (10) noted that some caregivers enrolled in their social support network resulted in a secondary stress reaction from individual interactions with other informal caregivers in the ICU. Combe et al. (11) reported that prospective patient diaries elicited feelings of discomfort and sadness for some informal caregivers, after photographs of their loved ones following death were seen.

The key findings among qualitative studies were that positive aspects of caregiving for critically ill patients form a multi-dimensional construct. This construct covered four key domains: (1) sense of personal fulfillment and gratification; (2) better understanding of the critical illness narrative; (3) awareness of regaining control while increasing resilience and promoting psychosocial recovery; (4) increase of family cohesion and functionality. Three conditions were identified as both predicting existence of positive aspects of caregiving and promoting better psychological outcomes. These were: (1) personal and social affirmation of the caregiving role; (2) contexts that favor attributing meaning to the caregiving process; and (3) effective cognitive coping and emotional regulation through the caregiving experience. All included qualitative studies provided insight into how future interventions might catalyze the fundamental change from reducing psychological stress to optimizing positive aspects of caregiving.

*Quality of the Evidence*

We included 63 RCTs, 16 quasi-experimental trials, and 23 uncontrolled trials. Together these studies included 10,808 informal caregivers, with a range of 17 to 1,685 caregivers. Seventeen studies were smaller piloting and feasibility trials, of which only six led to larger-scale implementation and evaluation studies. This highlights a primary weakness of the state of the evidence, which is that trials underpowered to measure intervention effectiveness may introduce type II error making it difficult to draw conclusions.

Due to the nature of caregiver interventions, participant blinding is often not possible or desirable (12, 13). However, greater efforts could be made to ensure the researcher performing statistical analyses is naïve to group allocation. Caregiver attrition with lack reasons provided was common, leading to high attrition bias for most studies. Unclear risk of reporting bias was nearly always due to lack of published protocols.

Outcome measures were not consistent across studies. Fifty-four RCTs assessed negative psychological outcomes and 22 RCTs assessed positive psychological outcomes. Where possible to determine, trial results were generally consistent with either no evidence of effect found, or a positive effect on informal caregiver psychological outcomes. The GRADE certainty of evidence overall was very low to moderate, with main reasons for downgrading being small sample sizes or high heterogeneity of interventions and populations.

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