Summary
Suicidal people often do not receive adequate treatment. A recent worldwide survey estimated that 44% of people with suicidal thoughts in high-income countries do not receive treatment. In middle- and low income countries the percentage of untreated suicidal people is even higher (72% and 83% respectively). Arising from the observation that treatment in its current form does not seem to suit or reach everyone in need, this thesis presents a new alternative to suicide prevention using the Internet as a mode of delivery. Specifically, an online self-help intervention aimed at reducing suicidal thoughts was developed and studied in a randomised controlled trial. The central aims of this thesis are to investigate the clinical effectiveness, acceptability, and cost-effectiveness of this intervention. The secondary aim of this thesis is to estimate disability weights for suicidal thoughts and mental distress involved in attempted suicide (Chapter 1).

**Chapter Two** demonstrates the severity of the problem targeted by the intervention, i.e. suicidal thoughts, in terms of disease burden. By estimating Disability Weights (DWs), the severity of a health state can be expressed on a 0-1 scale, with 0 representing full health and 1 representing the worst imaginable health state. Using an expert panel, DWs for suicidal thoughts and mental distress involved in attempted suicide were estimated in this chapter. For suicidal thoughts, a DW of 0.36 was generated, indicating that suicidal thoughts are as disabling as alcohol and cocaine dependence, severe asthma, and moderate heart failure. Mental distress involved in attempted suicide was comparable in severity to heroin dependence and initial stage Parkinson, expressed in an estimated DW of 0.46. When using these DWs to (provisionally) calculate Disability Adjusted Life Years (DALYs), a frequently used indicator of disease burden, an estimated 166,500 healthy life years are lost on an annual basis in the Netherlands due to suicidal thoughts. For mental distress involved in attempted suicide, this would be 45,800.

Suicidal people are often tormented by ruminative, repetitive thoughts such as ‘Nobody loves me’ and ‘I am a complete failure’. In **Chapter Three**, the similarities between suicidal thinking and worry and rumination are explored. Although empirical evidence is scarce and future research is needed to further investigate their relationship, this chapter concludes that characteristics of suicidal thinking can be usefully conceptualised as characteristics of worry or rumination, and that this conceptualisation can provide leads for treatment.

In **Chapter Four**, an inventory of Dutch suicide-related websites is compiled. Entering four different Dutch search terms in Google (‘suicide’, ‘zelfdoding’, ‘zelfmoord’, and ‘ik wil dood’), the first 50 results of each search were categorised. The majority of the 153 accessed websites fell within the ‘news and media’ category (31%). Next, the categories ‘interactive
communication’ (18%), ‘culture’ (16%), and ‘other organisations’ (15%) had the largest share. A similar percentage was aimed at suicide prevention (15%). These prevention-websites were further assessed using 17 quality features, revealing that Dutch online suicide prevention is not yet optimal. In particular, improvement is recommended in the field of e-help.

**Chapter Five** describes the design of a randomised controlled trial (RCT) comparing online unguided self-help for suicidal thoughts with a waitlist control group. For this trial, participants were recruited from the general population through advertisements in newspapers and on relevant websites. Eligibility was based on levels of suicidal thoughts and depressive symptoms. Ineligible respondents, i.e. respondents who were too suicidal or depressed to participate in online self-help, were provided with relevant referral information. In total, 236 respondents were randomised into the intervention (n=116) and control (n=120) condition. The intervention group received access to the intervention website, while the control group was provided with general information on suicidality and referrals to other organisations. Both groups were also advised to seek additional help (e.g. via the General Practitioner).

Measurements took place at baseline, 2 and 4 weeks into the intervention, and 6 weeks after baseline (post-test). At post-test, the control group also received access to the intervention website. Three months after post-test, a follow-up assessment was administered to both groups to see whether effects detected at post-test in the intervention group were maintained.

In Chapters Six to Eight, results of the RCT are presented. First, **Chapter Six** deals with the clinical effectiveness of the intervention. For suicidal thoughts, an effect size of 0.28 was detected in favour of online unguided self-help. In addition, significantly greater improvements were detected for hopelessness (d=0.28), worry (d=0.34), and health status (d=0.26) in the intervention group. When selecting participants in the intervention group who had completed at least three modules (n=65), between-group effect sizes increased for suicidal thoughts (d=0.44), hopelessness (d=0.48), and worry (d=0.43). Although the difference for health status was no longer significant, small effects arose for anxiety (d=0.32) and depressive symptoms (d=0.34). During the trial, eleven participants reported a suicide attempt, of whom four in the intervention and seven in the control group. No completed suicides occurred during the study.

**Chapter Seven** addresses the question whether results detected at post-test in the intervention group can be maintained up to three months. Results of the intervention group show that effects were generally maintained at follow-up, as illustrated by within-group effect sizes (obtained between post-test and follow-up) of 0.04 for suicidal thoughts, 0.12 for hopelessness, and 0.03 for worry and health status. For depressive symptoms, a significant
further reduction was detected (d=0.26). As the control group had received access to the intervention at post-test, this group could not be used in the follow-up as a comparator. Chapter Seven also contained results of a participant evaluation, which showed that the majority of the sample reported that their suicidal thoughts trouble them less over the course of the study. Also, the majority indicated to be satisfied with the intervention. Suggestions for improvement included the addition of guidance, and tailoring the intervention to individual needs.

In Chapter Eight, it is concluded that online self-help for suicidal thoughts is cost-effective. The mean incremental cost-effectiveness ratio (ICER) was estimated to be –€33,593, indicating cost savings per additional treatment response. Even when society is not prepared to pay for one additional treatment responder, the probability that online self-help on top of care as usual is more acceptable than waitlisted care as usual alone is 93.0%. Sensitivity analyses showed that providing 1, 2 or 3 hours of guidance per participant during the whole intervention would not alter the conclusion that online self-help is preferable from an economic perspective.

Finally, Chapter Nine summarises and discusses main findings. Main conclusion is that online self-help can be effective in reducing suicidal thoughts, suggesting it being a commendable alternative for those who are reluctant to seek regular treatment or feel their needs regarding their suicidality are not fully met in treatment. Also from an economic perspective, online self-help for suicidal thoughts proves to be an attractive option. In general, future studies are needed to replicate findings and provide more insight into the effectiveness of online suicide prevention. In addition, limitations and strengths of the study are outlined and various issues relating to online self-help for suicidal thoughts are reflected upon, such as safety of participants, implementation and dissemination. Finally, suggestions for future research and developments are formulated.