The Effect of Loneliness in the Elderly Population: A Review

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ABSTRACT: Loneliness is a significant but neglected circumstance in which many individuals, particularly the elderly, find themselves. This review aims to discuss the various effects that loneliness has on mental and physical health and the potential interventions that may alleviate this problem. This review used the PubMed, ScienceDirect, and WHO IRIS databases to search for relevant studies on the topic, mainly focusing on longitudinal studies due to the difficulty in distinguishing the causality between loneliness and its associated factors. In collating these studies, loneliness can be shown to be a significant independent risk factor for a number of conditions such as poor health behaviors (eg, smoking and alcohol consumption), physical health problems (eg, hypertension and motor decline), and psychiatric conditions (eg, depression and cognitive impairment). The interventions discussed, both low tech and high tech, have the potential to benefit patients at both an individual level and a population-wide level.

KEYWORDS: elderly, loneliness, aging, social isolation, behavior

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Introduction

Loneliness has been defined as "a complex set of feelings encompassing reactions to the absence of intimate and social needs."[1] It is often an effect of social isolation, which is extremely prevalent among the elderly population. An eight-year longitudinal study evaluating the prevalence of loneliness symptoms in the elderly population suggests that ~9% of the UK elderly population is severely lonely with another 30% displaying some loneliness.[2] The study also noted the value of social networks and good overall health in the prevention of loneliness.

The prevalence of loneliness is not just confined to the United Kingdom. There have been studies across the globe looking into the growing issue of loneliness in the elderly, with the location of these studies varying from populations in Australia to Iran, to Malaysia, and to the United States of America.[3–6] A common theme throughout these studies is the correlation of community interactions and loneliness. For example, the Malaysian study discusses the link between loneliness and participation in religious activities, often a central point of social interactions in many cultures as well as a source of external support. With the rapidly aging global population, this sense of community is going to become even more important than ever, especially with the World Health Organization reporting drastic rises in older individuals living alone across the world, including in regions typically associated with stronger family ties such as India and Japan.[7]

In addition, these studies demonstrate the strong link between loneliness and poor overall health. This link is the main focus of this review, which will aim to look into the effects of loneliness on health and then into the potential interventions to tackle this growing problem.

Risk Factors for Loneliness

A recent paper by Dahlberg and McKee discusses measuring the levels of loneliness in the Barnsley population. It investigates two aspects of loneliness: social loneliness and emotional loneliness, as originally described in the seminal paper on loneliness by Weiss.[8] Social loneliness is described as being a lack of belonging to a community or circle of friends, whereas emotional loneliness is described as a lack of deeper connections to attachment figures, such as a spouse or a close friend. The author demonstrated that a range of factors were correlated with social and emotional loneliness.[9] Social loneliness was related to being male, having low activity levels, and meeting a lower number of family and nonfamily members per week. Emotional loneliness was shown to be mainly related to having a lower capability to carry out activities of daily living, measured in this study using the Groningen Activity Restriction Scale. There were also factors that were correlated with both types of loneliness. These are being widowed, having low self-esteem, and having income discomfort.

As this was not a longitudinal study, it is difficult to distinguish the causal element in certain cases. For example, it is difficult to establish whether people would have a low self-esteem due to being lonely or whether people would be lonely due to low self-esteem.

However, identifying these risk factors is important as these factors can help to pinpoint individuals and groups who are at risk of loneliness and its negative effects and help in targeting interventions at appropriate populations.

The Effects of Loneliness on Health

There have been many studies looking into the effects of loneliness on health. These effects can be broken down into three broad categories. The first category is the effect of loneliness on salubrious behaviors, such as physical activity and appropriate nutrition. The second category is the effect on physical health itself, including cardiovascular disease and specific changes in biochemistry. The final category is the effect on mental health, mainly focusing on the well-established link with depression and anxiety and also delving into cognition.

There are several issues that are encountered when investigating loneliness. One is that it is often difficult to tease the effect of loneliness apart from other variables, such as stress or morbidity. A second issue is that often there is a synergistic interaction between loneliness and other factors. One solution to this is to focus on longitudinal studies as the timescale helps to establish a more reliable causal relationship between different variables, as opposed to cross-sectional studies that merely provide a snapshot.

Loneliness and Behavior

It is recognized that the elderly are at an increased risk of many diseases and that it is important to ensure that modifiable risk factors are controlled in order to reduce the likelihood of severe disease and preserve quality of life. An important modifiable risk factor is physical activity, as low levels of physical activity are heavily associated with increases in noncommunicable health problems, including cardiovascular disease.[10]

A longitudinal study conducted in Canada demonstrated that loneliness longitudinally predicted both physical activity and mortality in a cohort of elderly women.[11] Furthermore, this has been demonstrated in other studies, and the mechanism by which loneliness influences physical activity has been investigated. One longitudinal study analyzed the effect of marital status and direct social control (ie, the influence of others in promoting positive health behaviors) on physical activity. It found that marriage was associated with increased social pressure for health promotion compared with those who were unmarried and that the amount of social control was associated with increased physical activity three years later.[12] Therefore, this led to the hypothesis that the link between loneliness and mortality is mediated through the effect of external pressure to promote physical activity. However, it has been noted in other studies that this is an insufficient effect to fully account for the increased mortality seen in lonely individuals and that this hypothesis does not explain the increased mortality seen in socially isolated nonhuman animals.[13]

Another important risk factor of disease in the elderly is alcohol abuse. This is particularly associated with morbidity in the elderly due to the interaction of alcohol with comorbidities and polypharmacy.[14] There is also a difference in alcohol tolerance and volume distribution in older patients compared with younger patients, resulting in increasing clinical significance with similar quantities of alcohol.[15] Alcoholism is often overlooked by physicians and underreported by patients making specific studies investigating associated factors difficult to carry out. However, a study investigating factors associated with alcohol abuse in old age psychiatric referrals found that loneliness was a contributory factor in 43% of patients, suggesting that this is another pathway by which loneliness impacts on health.[16] Moreover, the impact of loneliness was not just confined to alcohol abuse but potentially extends to general substance abuse. Two studies investigating factors precipitating drug dependence in elderly populations attending drug treatment facilities suggested a link between drug dependence and both loneliness and social isolation.[17,18] While these studies have drawbacks due to their cross-sectional nature and the potential for patient selection bias by sampling of individuals already engaged in therapeutic services, it hints at clinically relevant link and potentially an area in which to intervene when treating addictions.

Malnutrition is a major factor that can impact on health and is unfortunately a very common scenario in the elderly population. The effect of loneliness on malnutrition was investigated in the SOLINUT study, which looked into the nutritional status of the elderly population living alone. The results showed that 21.3% had a dietary intake <20 kcal/kg/day, which is the threshold for established undernutrition, compared with 3%–7% in a nonisolated elderly population. Additionally, the intake of various vitamins and minerals was measured with the mean intake falling below the recommended daily allowance for magnesium, calcium, iron, and zinc as well as vitamins B1, B5, B6, B9, B12, C, and E.[19] This malnutrition will have a direct impact on the long-term health of many of these individuals as it will increase the disease burden that these patients suffer.

Sleep problems are also a common problem in the elderly and can exacerbate problems in both physical and mental health. Up to 50% of the geriatric population suffers from conditions such as sleep apnea and insomnia.[20] Loneliness has been shown to have an association with nocturnal sleep problems and daytime sleepiness, particularly in older adults where it has been suggested that loneliness fully mediated the link between interpersonal stress and sleep problems.[21]

Loneliness and Physical Health

Many of the risk factors discussed above are linked to cardiovascular disease, and it is little surprise, therefore, that increased cardiovascular disease has been recognized as an effect of loneliness. A study involving 1880 elderly Malaysians

showed that loneliness significantly increases the likelihood of developing hypertension, with serious implications for the risk of acute vascular events such as myocardial infarctions and cerebrovascular accidents.[22] This result supports the previous findings, which found that age-related increases in blood pressure were higher in lonely individuals.[23]

In the elderly, maintaining independent function is vital to ensuring a high quality of life. Motor decline is a common cause of dependency, and studies into loneliness suggest that loneliness itself is a risk factor for an increased rate of motor decline. A recent study looking into this phenomenon showed that for every 1 unit increase in loneliness (as measured by the de Jong-Gierveld loneliness scale), the rate of motor decline increased by 40%. In this study, motor decline was calculated using a composite measure of 18 different elements of motor function, including grip strength, mobility, and coordination. This ensured that the results more accurately reflected decline in functionality, as opposed to merely reflecting muscle strength. Most importantly, this study also demonstrated that this association was still valid after correcting for difference in depression, physical conditions, and baseline mobility.[24] This finding was corroborated in an American longitudinal study involving ~2000 patients. While their loneliness questionnaire was less subtle than that used in the earlier study, they found that, over the six-year period of the study, loneliness was associated with an increased rate of decline in all motor areas, including activities of daily living and general mobility.[25] Decreased mobility has an obvious causal link to social isolation and hence loneliness. However, these studies propose a two-way interaction, whereby loneliness is a risk factor for reduced mobility in addition to being an outcome.

It has also been suggested that loneliness has implications on the biochemistry of individuals. While these studies into biochemical differences are still in their infancy, there have been studies implicating loneliness in immune function. Loneliness appears to have two effects on the immune system. The first is to increase the systemic level of inflammation. IL-6 is a proinflammatory cytokine, with many effector functions such as stimulating acute-phase protein synthesis and activating osteoclasts. In the laboratory setting, the IL-6 response to stressful stimuli was greatly increased in lonely individuals compared with nonlonely controls.[26] Moreover, this study also demonstrated that increased loneliness was correlated with reduced response to cortisol, an anti-inflammatory hormone. The second effect is to reduce the effectiveness of the immune system. A small-scale study on nonelderly individuals showed that those who scored higher on loneliness had lower levels of natural killer cells and a poorer T-lymphocyte response to phytohemagglutinin, a mitogen that can stimulate T-lymphocytes.[27] Another small-scale study in young adults suggested that higher levels of loneliness were related to poorer antibody response to the influenza vaccination.[28] While one should be wary when drawing conclusions from small-scale studies, especially when the results may not translate to an elderly population, taken together, these studies hint at deeper biochemical alterations in lonely individuals, particularly involving immune dysregulation, whereby inflammation is increased and overall efficacy of the immune system is decreased. Although the clinical impact of these potential alterations is not yet clear, this provides a potentially illuminating insight into mediating steps between loneliness and overall morbidity.

Loneliness and Psychiatric Health

The association between loneliness and depression is the most widely accepted and has been studied for many years. However, it is hard to distinguish which of the two is the causal factor meaning that, despite their abundance, cross-sectional studies are not particularly useful when researching the rates of depression as a result of loneliness. On the other hand, longitudinal studies can help to elucidate the temporal relationship between these factors, allowing us to draw some more substantial conclusions.

A longitudinal study conducted in Finland investigating a cohort of 75-year-old[29] individuals over a 10-year period showed that loneliness was a predictor of long-term trajectories of depressive symptoms. In this study, the data for loneliness suggest that the effect is comparable with the effect of poor general health on depressive symptoms—a well-known risk factor for depression. Further studies have built on these data and seem to corroborate the hypothesis that loneliness is a risk factor for developing depressive symptoms. In fact, a 20-year longitudinal study published in 2015 added support to this hypothesis and further added that a large and diverse social network was protective against overall mortality as well as depression.[30]

It should also be noted that this review additionally examined anxiety with regard to loneliness. It showed that older adults reporting feelings of loneliness had stronger feelings of anxiety, as measured on the Hospital Anxiety and Depression Scale, and that a better social network was protective for anxiety. It is also known that anxiety and depression are often comorbid in elderly populations.[31] This creates a small network of interrelated factors affecting one another, ie, loneliness can lead to depression and anxiety, which can then influence each other.

Another longitudinal study conducted in Illinois looking into middle-aged and older adults added weight to the idea of loneliness being a causal factor for depression. However, it also demonstrated that the converse is also true, ie, depression is a risk factor for loneliness.[32] This finding is not unexpected and the reciprocal influences leads to the concept of a synergistic symptomatology between loneliness and depression. Furthermore, this has potential implications for interventions as breaking the loneliness–depression cycle may have a significant impact on the prevalence of not only depression and loneliness themselves but also the multitude of other comorbidities on which both have influences.

While this synergism has obvious psychological mechanisms, there may also be physiological changes in the brains of socially isolated individuals creating an increased tendency to develop depression. A study using fMRI to image the brains of younger adults suggests that the ventral striatum, known to be highly activated in the reward pathway, is more weakly activated in lonely individuals than nonlonely individuals, possibly hinting at the pathophysiology behind the link between loneliness and depression.[33] While interesting, caution should be used when interpreting these results especially in regard to the aforementioned disadvantage of nonlongitudinal studies, the validity of fMRI results, and the extrapolation of results from a younger population onto an older population.

The other main psychological domain affected by loneliness is cognition. Of particular relevance to an elderly population, loneliness has been linked to the development of dementia. One longitudinal study undertaken in Sweden suggested that those who had poorer social networks had an increased risk of developing dementia, as defined by the Diagnostic and Statistical Manual of Mental Disorders.[34] This paper calculated that, for their 1203 nondemented individuals at the start of the experiment, there was a relative risk of 1.9 of developing dementia for those living alone relative to those who were married and living with someone. They also showed that the relative risk of dementia increased as the frequency and quality of social interactions decreased. Furthermore, a more recent paper suggested that there is an increased risk of Alzheimer's disease among those individuals who were most lonely.[35] This study also compared emotional support with instrumental support in reducing the rates of cognitive decline. A much greater benefit was observed with emotional support than from instrumental support, ie, emotional support from family and friends had a greater impact than instrumental support from a carer. However, when examining the results of this study, one should take into account the interesting findings of an earlier paper looking into the association between loneliness, clinical expression of Alzheimer's disease, and direct measurement of Alzheimer's disease pathology at postmortem. Although this paper showed a correlation between loneliness and cognitive decline, there was no correlation found between loneliness and the direct postmortem measurements, implying that the effect of loneliness on cognition is independent of Alzheimer's pathophysiology and could be due to the lack of aid in daily activities leading to increased clinical expression for the same absolute level of Alzheimer's pathology. However, this would need a further study to establish.

Summary of Effects

Figure 1 summarizes the main areas of health, which are affected by loneliness in an elderly population. While this diagram is hugely oversimplified, particularly as it ignores the synergism between many of the factors, it does demonstrate the far-reaching implications that loneliness can have on the health of an individual. Examples of synergism between factors include the associations between depression, alcohol, and cognition and between physical activity, motor decline, and cardiovascular health.

In fact, many of the consequences of loneliness are also risk factors for loneliness. Looking back to the risk factors mentioned earlier, there are clear parallels. Low activity appears as both a risk factor and a complication, and there is a clear connection between the risk factor of low self-esteem and the complication of depression. Furthermore, a reduced

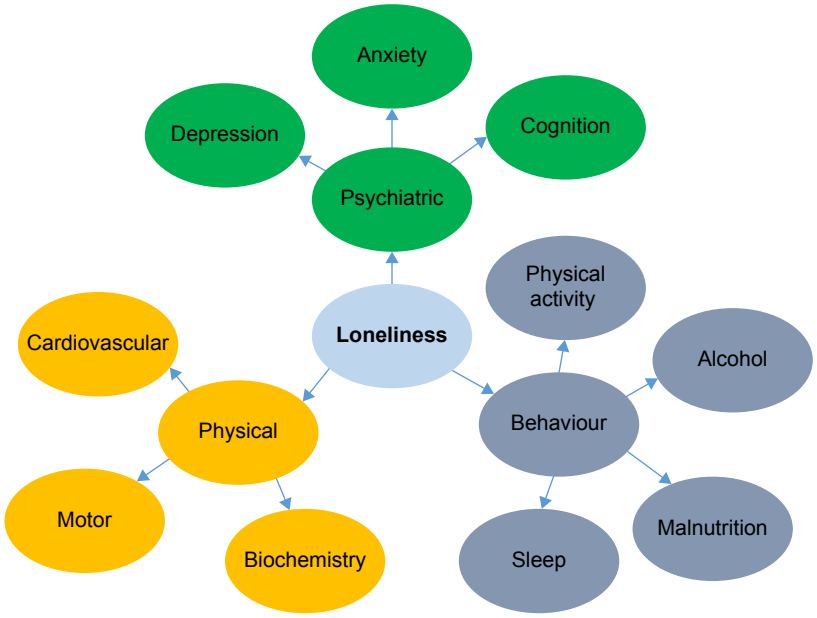

Figure 1. Summary of the main effects of loneliness on the health of an older individual.

ability to carry out activities of daily living often occurs as a result of declining motor or cognitive function, and this is, therefore, also represented in both the risk factor section and the complication diagram.

The implication of these facts is that loneliness does not act as a sole risk factor for declining health but is rather a central nucleus in a network of interacting factors. Due to its many interactions, it can exacerbate many different health conditions, potentially making it a strong target to aim for when trying to improve health outcomes—not only in the individual but also across the entire population. Interventions, targeted at specific populations based on the risk factors and the effects of loneliness, can help to prevent and reverse these negative effects.

In the resource-poor environment where many health-care services find themselves, it is always worthwhile to weigh up the value of any potential interventions. In any system, there are a finite number of health initiatives that can be implemented and cost-effectiveness is crucial. Tackling loneliness in the elderly would not only have the benefits discussed above, but it could also be argued to be a fairer division of resources based on the current methods used by health-care providers to decide this. Most interventions are evaluated using a quality-adjusted life years (QALYs) approach, such as the National Institute for Care and Health Excellence in the UK.[36] In practice, the value measured is more closely related to years with less disability. Reducing loneliness would go beyond the benefit of reducing disability and would increase enjoyment of life in a more general sense. In this way, improvements in loneliness may be undervalued by QALYs alone.

As a fairly abstract term, loneliness is difficult to challenge on a population-wide scale unlike other health campaigns such as antismoking programs. Despite this, many different angles have been taken by researchers around the world, and these will be discussed in the next section.

Interventions to Combat Loneliness

Addressing loneliness with focused interventions is an important way to reduce loneliness and its effects on individual's physical and mental health. The interventions discussed in this section aim to reduce the negative effects of loneliness shown in Figure 1 and show improvements in both physical and psychiatric elements, among them.

Unfortunately, while the studies demonstrate the effects of the intervention on loneliness, not all of the studies directly measure whether there was any benefit on health outcomes. While this is a weakness of some of the papers, demonstrable reductions in loneliness should not be undervalued and can help to direct further research.

Although the issue of loneliness in the elderly population may not have been as high a priority as it perhaps should have been, reducing social isolation has nevertheless been an objective for many health-care providers.

In the UK, the NHS has an online advice page offering simple suggestions to those who suffer from loneliness.[37] This page offers some general advice and provides information about certain support groups. However, it is a passive attempt to reduce loneliness in the sense that the drive for change has to come from the individuals themselves. Given the fact that these individuals are socially isolated and hence less likely to discover this information in addition to the aforementioned associations with depression and physical health issues, this is unlikely to produce a great impact on this health problem.

Other groups have attempted more active programs with a range of success. These can be categorized in many ways. While the standard classification in reviews and meta-analyses seems to be between group and individual interventions, a more forward-thinking classification may be to distinguish between classical *low-tech* interventions and mainly Internet-based *high-tech* interventions.

Low-tech Interventions

Low-tech interventions are still the most commonly investigated solutions to the loneliness problems and have several benefits over high-tech interventions, chiefly that rates of computer literacy are low in the elderly populations. The two main types of low-tech interventions are telephone befriending and small group interventions, both of which have been subject to many studies and reviews.

Telephone befriending is a relatively low-cost intervention, which involves volunteers calling isolated elderly individuals. One qualitative study looked at the impact of a large eight-site project called *Call in Time*, which assessed the use of telephone befriending in reducing loneliness in the elderly.[38] It suggested several benefits that the subjects of the study received. One of these benefits was the increased contact it brought to housebound individuals, who would not be able to attend group meetings. There was also qualitative data suggesting that it improved mood and alleviated depression and anxiety. One of the more unexpected benefits was the finding that people were more willing to disclose personal feelings to befrienders than they were to family members. This is an important finding as it indicates that telephone befriending services can reduce emotional loneliness, as well as social loneliness. A randomized controlled study called the *Putting Life In Years* (PLINY) trial also looked into telephone befriending services.[39] Although it did demonstrate an improvement in general health (as measured by the Short Form[36] Health Instrument) and in mental health (as measured by a mental health dimension score), the trial had to stop due to a high rate of attrition of volunteer befrienders. If telephone befriending was to be implemented on a large scale, retaining volunteers would be vital for continued reduction in loneliness.

Small group sessions have long been used as interventions for reducing loneliness, and many such groups are now running regularly. A study in Stockholm in 1985 suggested that small group meetings improved levels of self-esteem and lowered systolic and diastolic blood pressures in a population of elderly women, demonstrating that this is not a new concept and the

benefits have been known for many years.[40] A more recent and quantitative study from Japan looked into the effectiveness of an educational, cognitive, and social support program.[41] As well as providing a place for socializing, this aimed to act as a stimulating environment to aid cognition and as a source of information about other services in the local area. Outcomes were measured after one and six months and showed a significant difference in subjective well-being and perceived loneliness between the intervention group and the control group. It also demonstrated that subjects in the intervention group were more familiar with other services provided in their local area, which would be extremely useful in practice for two main reasons. First, a network of services would be able to meet the needs of attendees more thoroughly and help to protect any service from patient overload. Second, as mentioned earlier, a larger and more diverse social group is protective for many of the complications of loneliness, and this would be more easily achieved if individuals were members of several different groups or societies. It is unfortunate that this study did not measure any specific changes in physical health measurements and also that it ceased after six months as it would be interesting to observe whether these benefits would continue long term.

A comparison between group-based and one-to-one interventions targeting loneliness was conducted in a meta-analysis involving 32 studies, mainly involving small group meetings and befriending services.[42] This study concluded that factors which were linked with a high probability of success were being group centered, based on theoretical principles and being more participatory in nature. Therefore, these are important factors to consider, but it is worth taking note of the limitations in many of the studies, chiefly the lack of a definition of *social isolation* or *loneliness*. Despite the data favoring group-based interventions, it is also worth thinking about patient subpopulations who may be missed by them, eg, housebound or institutionalized individuals, who may be unable to attend group sessions.

High-tech Interventions

High-tech interventions are currently more experimental in their nature but could have huge potential for future development. The two methods that will be focused on will be the use of robots and the use of social media, as these are two areas in which there is great potential for future development as technology advances.

Robotics is a rapidly developing field, and although many of the robots used are still early prototypes, they provide an alternative approach to loneliness. There have been a number of studies into this area, mainly from Japan, probably fueled by the combination of a rapidly aging population and an advanced robotics industry. Despite the appeal in films such as *Robot and Frank*, the current ambition of these projects is not to create a conversational helper robot but is more in line with creating a robotic pet, which may have some of the benefits of *pet therapy*, which is an intervention involving companion animals and has already been comprehensively covered in the literature.[43,44] An example of this is *Paro*, an interactive robotic seal companion.[45] A study in 2013 sent Paro out to care homes to observe whether it could reduce loneliness. The results suggest that it did improve the loneliness rating in residents compared with those in a control group. However, looking more closely at the results, they actually demonstrate that it in fact merely caused the residents to talk to each other more, which actually suggests that Paro is better at tackling boredom rather than loneliness itself. Other reviews of companion robots have similarly found potentially promising effects but with limited scientific value, including a meta-analysis looking into 41 studies on assistive robots.[46] Ultimately, more research needs to be done into this area before it can be seriously considered, and it is unlikely to be a cure-all as the effects of a robot on emotional loneliness in particular would be difficult to establish.

The elderly are not the first to come to mind when discussing social media but the potential benefits could have an impact on loneliness. The main stumbling block of the past was computer literacy rates. While still lower in the elderly population, the rates are increasing and are only going to continue increasing as today's computer literate middle-aged population advance into old age. Data from Ofcom show that currently 52% of people aged over 65 years have some Internet usage. Additionally, social media usage is on the increase with a 7% increase (from 21% to 28%) in people aged over 65 years old and a 16% increase (from 33% to 49%) in the people aged between 55 and 64 years. In addition, while much of the developing world still trails the developed world in terms of Internet access, there has been a marked increase in the number of users from developing countries in recent years. In 2014, there was an 8.7% increase in Internet users in developing countries, and the Internet users in developing countries now make up two-thirds of the world's users.[48] In spite of this, assessing the potential Internet access of any population intended for an intervention would be critical in ensuring that the intervention is a success.

Because of this increasing popularity, Internet-based approaches have proved a fertile area of recent study. A cross-sectional analysis looking at current Internet trends in the elderly and the relation to loneliness showed that increasing online frequency correlated with reduced loneliness.[49] Moreover, they demonstrated that the use of Internet was particularly useful for maintaining contact in already established relationships, perhaps increasing the quality of relationships and helping to combat emotional loneliness as well as social loneliness. Although this study was just investigating correlations and had some limitations with regard to sample size, it does provide proof of concept that the Internet can be used as a tool to reduce loneliness in the elderly.

A meta-analysis of 18 studies on smart technology showed that most studies demonstrated some benefit in improving loneliness as well as associated factors such as depression.[50] Furthermore, it was noted that the most

successful programs involved interactive online programs, which incorporated health information, support groups, and general discussion areas. These are similar to the factors involved in creating a successful small group intervention, further supporting the notion that interactivity, group interactivity, and informing people about relevant local services are crucial to the success of reducing loneliness. While the potential is great, it would be important to cover any possible negatives that may arise from increasing Internet use in the elderly, mainly involving harmful misinformation about health and the risk of criminal activity in the form of scams or identity theft.[51]

Conclusion

Loneliness is a major but currently underestimated cause of reduced quality of life in the elderly population, and it can affect salubrious behavior as well as physical and mental health in a myriad of ways. It can potentially be targeted by various interventions with the most successful being group based and creating a network of services, allowing the potential of forming a more diverse social network.

However, there are some inevitable limitations to these arguments. Foremost is the lack of clear definitions of *loneliness* and *social isolation*. Differing groups of researchers have differing cutoffs for each of these terms and some use these terms interchangeably. This makes it very difficult to compare studies and increases the risk of bias, possibly affecting the validity of certain results. If further study into this field is to happen, as it surely must, these terms need to become more clearly defined. This will have the dual effect of ensuring research is validated as well as helping in a clinical scenario by ensuring that interventions are offered to the most appropriate patients. Closely behind this are the vague concepts of *social loneliness* and *emotional loneliness*. While some research hints at subtle but important differences between these concepts, other research merely measures a composite loneliness. Distinguishing the effects of the interventions on the different types of loneliness and then measuring the overall change to health and quality of life would aid in evaluating the most effective interventions. In addition, the validity of studies looking at interventions would be greatly enhanced if they were able to demonstrate reductions in the effects of loneliness as well as reductions in loneliness itself.

In a report from the World Health Organization, the key ideas discussed on tackling loneliness center around recognizing the individuals most at risk and using a variety of methods to confront the issue including group- and technology-based interpersonal interventions, preferably with a participatory and socially useful element.[52] These methods for interventions would also have to be adapted based on the specific population dynamics, including cultures, institutionalization, and physical impairments.

The interventions discussed are mainly from the viewpoint of health-care provider. However, there are simple changes an individual clinician can make. By discussing loneliness with patients, those suffering can be identified and offered simple advice and/or direction to local facilities. This broader approach to patient care can help to make more of a positive impact on the lives of patients.

Author Contributions

Conceived the concepts: JAC. Analyzed the data: JAC. Wrote the first draft of the manuscript: JAC. Developed the structure and arguments for the paper: JAC. Made critical revisions: JAC. Author reviewed and approved of the final manuscript.

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