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Effectiveness and cost-effectiveness of proactive technology enabled care in adult social care: a rapid review

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1. Technology Enabled Care (TEC)

Technology Enabled Care (TEC) uses digital tools such as telehealth and telecare to help people live independently—especially older adults and people managing long-term conditions. TEC can be reactive (responding when support is needed) or proactive (helping prevent problems through early identification and intervention). While TEC can improve outcomes and reduce costs, the evidence on effectiveness and value for money in adult social care is still developing. This rapid review summarises recent research on TEC's impact on independent living, quality of life, and cost-effectiveness.

2. Methodology

A search was made using Google Scholar for evidence on proactive technology-enabled care in adult social care. The main search used the phrase "effectiveness of proactive technology-enabled care in adult social care" and focused on studies published between 2019 and 2024.

The review looked at the first six pages of results and screened articles against predefined inclusion criteria. The search included peer-reviewed, open-access studies only. Because the initial search returned few relevant studies, the search was done again using the terms: "cost-effectiveness of proactive telecare" and "effectiveness of proactive telecare". In total, 10 studies were included, grouped findings by theme.

2.1 Impact on independent living

The evidence review looked at two studies about proactive personalised telecare services.

The first study came from Spain and looked at the Impact on Ambulance Mobilisations of an Increasing Age Profile of Telecare Service Users Receiving Advanced Proactive, Personalised Telecare in Spain—a Longitudinal Study 2014–2018.

The study found that service users of advanced proactive personalised telecare services in Spain found that proactive telecare helped individuals live independently for longer without increasing their risk profile. Ambulance mobilizations decreased, and older service users did not show higher dependency or increased risks over time.

The second study came from Lancaster University and valuated the proactive telecare service OKEachDay, which allows users to confirm their well-being by pressing an "OK" button, found that it promoted autonomy, supported independent living, and provided social resources, contributing to improved health and well-being. For more information on the study see the original thesis by Dr Laura Fothergill Understanding the impact of a proactive telecare intervention in supporting independence, health, and well-being in older adults.

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2.2 Life satisfaction and or quality of life

The evidence review looked at two reviews.

The first review looked at effects of a nurse-led telehealth self-care promotion program on the quality of life of community-dwelling older adults: systematic review and meta-analysis, it is a systematic review and meta-analysis found that nurse-led telehealth programs improved the quality of life (QoL), self-efficacy, and depression levels of community-dwelling older adults compared to usual face-to-face care.

The second study from Bond University in Australia looked at the effectiveness of telehealth versus face-to-face interventions for anxiety disorders: A systematic review and meta-analysis noted that telehealth and face-to-face psychotherapies showed no differences in outcomes like symptom severity for OCD, anxiety, or depression, nor in function, working alliance, or client satisfaction.

2.3 Cost-effectiveness

A study using data from Lancashire County Council looked at the economic assessment of the impact of telecare on the use of social care resources using a zero-inflated, hierarchical linear statistical model it was published in the National Library of Medicine (USA). Found telecare resulted in a net annual cost difference of £4,538 to £5,803 per service user, with a potential £17 million in avoided costs annually.

Information from the effectiveness and cost-effectiveness of assistive technology and telecare for independent living in dementia: a randomised controlled trial published by Age and Aging journal looked at adults with dementia found that the full assistive technology and telecare package was not cost-effective for improving health-related quality of life (QALY) or reducing societal costs.

An evaluation of proactive telecare outbound calling in Scotland found that proactive telecare is cost-effective and enhances customer well-being, contributing to reduced workload and responder service demands.

A study on the cost-effectiveness of proactive health support—telephone-based self-management support compared with standard care for persons at risk of hospital admission looked at the incremental cost-utility ratio (ICER) of proactive health support (PaHS). The study found no difference in healthcare costs, and programme costs were on average €1,762 per patient, providing incremental costs of €2,075. Incremental effects on quality-adjusted life years (QALY) were 0.007, resulting in an ICER of €296,389 per QALY gained.

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A systematic review on the cost-effectiveness of telehealth-delivered nutrition interventions for adults with chronic diseases found that 60% of studies from a health service perspective and 33% from a societal perspective were cost-effective.

2.4 Impact on health outcomes/adverse health events

The impact on Ambulance Mobilisations of an Increasing Age Profile of Telecare Service Users Receiving Advanced Proactive, Personalised Telecare in Spain—a Longitudinal Study 2014–2018 study from Spain showed no increase in health risks over time, indicating that proactive TEC can reduce adverse health events by providing timely support and reducing ambulance mobilizations.

In randomized controlled trial with adults with dementia found that the full assistive technology and telecare package did not significantly reduce health-related issues or improve quality of life outcomes, suggesting no significant impact on health outcomes. More information is available from: The effectiveness and cost-effectiveness of assistive technology and telecare for independent living in dementia: a randomised controlled trial.

Proactive telecare in Scotland enabled early referrals to community services and primary care, potentially reducing negative outcomes for vulnerable individuals by assessing risks early. More information is available from: Evaluating Proactive Telecare Outbound Calling in Scotland Report November 2022 from The University of the West of Scotland.

2.5 Impact on use of healthcare resources

The study in Spain indicated that despite an aging population, ambulance mobilizations decreased over time, suggesting that proactive telecare can reduce the need for emergency healthcare interventions. More information is available from: Impact on Ambulance Mobilisations of an Increasing Age Profile of Telecare Service Users Receiving Advanced Proactive, Personalised Telecare in Spain—a Longitudinal Study 2014–2018

Proactive telecare in Scotland helped reduce the need for reactive calls and lower responder service demands, indicating a decrease in healthcare resource usage. More information is available from: Evaluating Proactive Telecare Outbound Calling in Scotland Report November 2022 from The University of the West of Scotland.

2.6 Acceptability of TEC to clients/feedback from user experience

A qualitative study on proactive telecare systems for older adults found that telecare improved safety, social connection, and early detection of health issues, which supported independent living. However, success depended on individual preferences, social networks, and financial resources. More information is available from: Understanding the Value of a Proactive Telecare System in Supporting Older Adults' Independence at Home: Qualitative Interview Study Among Key Interest

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Groups published in the Journal of Medical Internet Research and available in the US National Library of Medicine.

The study that evaluated the OKEachDay service, allowing users to confirm their well-being by pressing an "OK" button, found it to be both acceptable and feasible, suggesting it could be a scalable intervention for supporting older populations. For more information on the study see the original thesis by Dr Laura Fothergill Understanding the impact of a proactive telecare intervention in supporting independence, health, and well-being in older adults

2.7 Barriers and facilitators to implementation

The study on Proactive telecare in Scotland highlighted that scalability of services faced challenges related to data integration and system interoperability, which need to be addressed for broader implementation. More information is available from: Evaluating Proactive Telecare Outbound Calling in Scotland Report November 2022 from The University of the West of Scotland.

The qualitative study indicated that proactive telecare's success is contingent upon careful implementation, ensuring that it meets the diverse needs of older populations, including matching the technology to individual preferences, social networks, and financial resources. More information is available from: Understanding the Value of a Proactive Telecare System in Supporting Older Adults' Independence at Home: Qualitative Interview Study Among Key Interest Groups published in the journal of Medical Internet Research and available in the US National Library of Medicine.

3. Conclusion

The evidence suggests that TEC, particularly proactive models, can have positive impacts on independent living, health outcomes, and well-being. However, the cost-effectiveness of these interventions varies, and certain TEC systems (like PaHS) may not be as cost-effective as hoped. The effectiveness of TEC is also contingent upon matching interventions with individual needs and resources, suggesting that tailored, person-cantered approaches are crucial.

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